

# Central Pacific #1

## GOVERNOR STANFORD

### Feasibility Report



CENTRAL PACIFIC RAILROAD

LOCOMOTIVE No. 1 "GOVERNOR STANFORD"

A LOCOMOTIVE BIOGRAPHY:

HISTORICAL PERSPECTIVE

SPECIFICATIONS

COMPONENT ANALYSIS

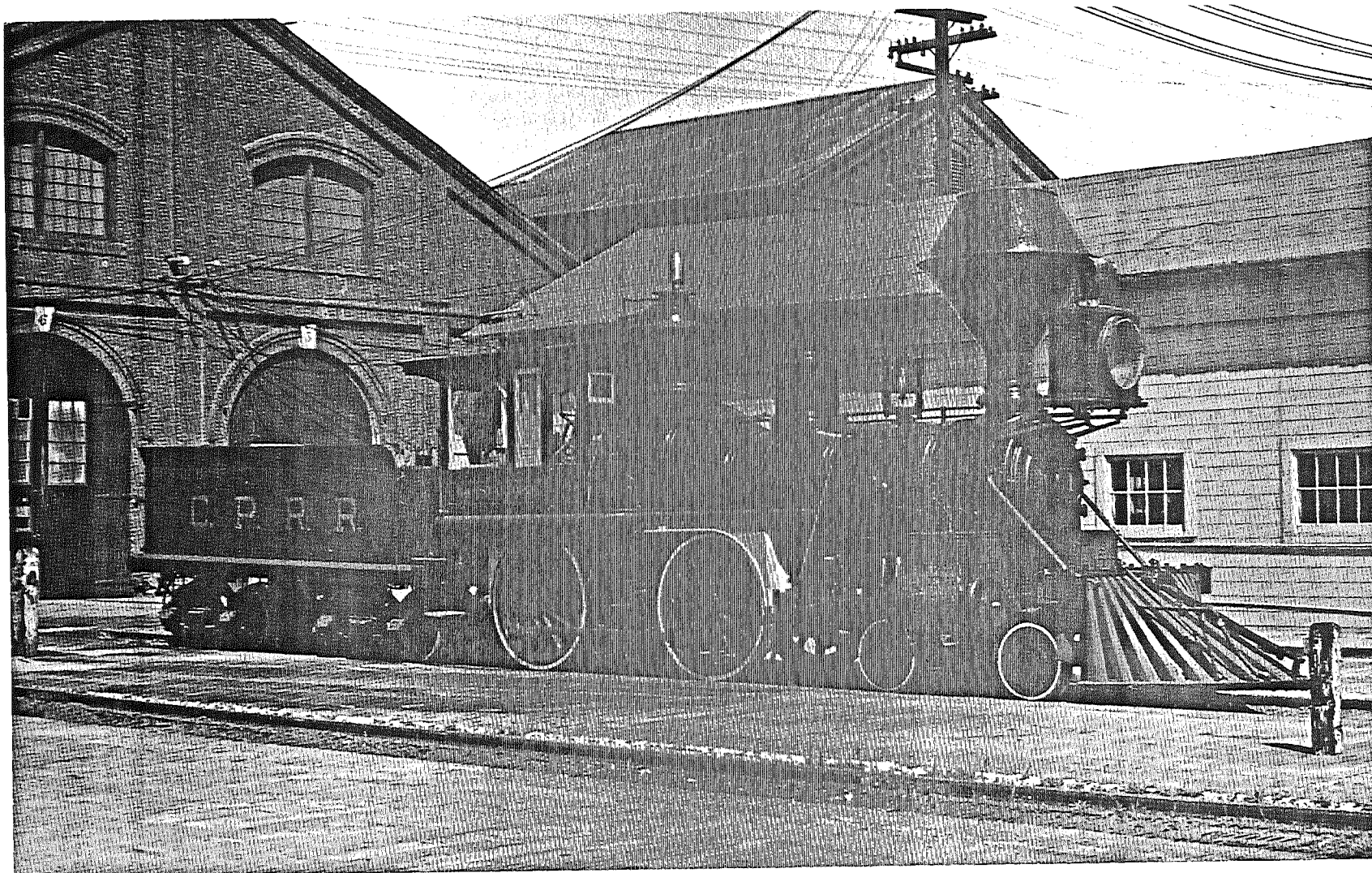
APPENDICES

CALIFORNIA STATE RAILROAD MUSEUM

CALIFORNIA DEPARTMENT OF PARKS & RECREATION

JANUARY 1977





Sacramento, May 1969

## CHRONOLOGY

|                            |                                                                                                                                                                                                |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| late 1862                  | Built by Richard Norris and Son, Philadelphia, Pennsylvania. Shop construction number 1040. Cost new \$13,688 including \$2,282 freight.                                                       |
| 5-18-1863                  | Departed Boston for San Francisco on sailing ship "Herald of the Morning."                                                                                                                     |
| 9-21-1863                  | Arrived San Francisco, transferred to river schooner "Artful Dodger" for delivery to Sacramento.                                                                                               |
| 10-6-1863                  | Arrived Sacramento, California.                                                                                                                                                                |
| 11-6-1863                  | Assembly of locomotive completed and boiler fired.                                                                                                                                             |
| 11-10-1863                 | Trial trip.                                                                                                                                                                                    |
| 11-11-1863                 | In service for inaugural run from Front and I Streets to the railhead at 22nd Street.                                                                                                          |
| 3-21-1864                  | Hauled the railroad's first two passenger cars to the end of the line and return.                                                                                                              |
| 3-25-1864                  | Pulled first revenue freight of the Central Pacific, consisting of 3 car loads of granite into Sacramento from Brigham's Quarries.                                                             |
| 4-15-1864                  | Pulled the first scheduled passenger train.                                                                                                                                                    |
| ca. 1869                   | Reboilered at C.P. Sacramento Shops.                                                                                                                                                           |
| 6-22-1870                  | Into shops for repairs resulting from wreck; work completed 6-30-1870.                                                                                                                         |
| 7-1-1873                   | General overhaul - outshopped as fire engine, installation of fire pump on top of boiler, air brakes, new tender frame and tank and Stevens smoke stack. Head light, work completed 9-24-1873. |
| date unknown               | Converted to burn coal.                                                                                                                                                                        |
| date unknown<br>after 1882 | extensive rebuilding.                                                                                                                                                                          |
| 1891                       | Renumbered S.P. No. 1174.                                                                                                                                                                      |
| 1893                       | On display at San Francisco mid-winter fair.                                                                                                                                                   |
| 1-12-1895                  | Last day operated on railroad.                                                                                                                                                                 |
| 11-23-1895                 | Condemned                                                                                                                                                                                      |
| 2-28-1899                  | Repainted at S.P. Sacramento Shops as C.P. No. 1 for                                                                                                                                           |



|                            |                                                                                                                                                                             |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                            | presentation to Mrs. Leland Stanford, completed 3-13-1899.                                                                                                                  |
| 3- -1899                   | Presented by Mrs. Stanford to Stanford University.                                                                                                                          |
| 4-8-1899                   | Moved from Sacramento to Palo Alto for storage on campus.                                                                                                                   |
| 1916                       | Moved into Stanford University Art Museum.                                                                                                                                  |
| 1951-1954                  | Cleaning, repairing & repainting as result of 35 years of vandalism and neglect. Replacement of non-original type gauges and other cab components stolen from locomotive.   |
| 5-1-1963                   | Loaned to Pacific Coast Chapter of the Railway and Locomotive Historical Society, Inc.                                                                                      |
| 5-28-1963                  | Moved from Stanford to the Santa Fe Railway at Richmond, California by Bigge Drayage; stored under cover in locomotive and caboose shops.                                   |
| date unknown<br>mid 1960's | Builder plate stolen - two duplicate plates made from remaining original furnished and installed by Pacific Coast Chapter of the Railway and Locomotive Historical Society. |
| 1967                       | Moved from Richmond to Key System Barn in Oakland, Calif.                                                                                                                   |
| 1969                       | Loan agreement executed between the Pacific Coast Chapter of the Railway and Locomotive Historical Society and the California Department of Parks & Recreation.             |
| 5-1-1969                   | Moved from Oakland to S.P. Shops, Sacramento; cleaned & repainted by S.P.                                                                                                   |
| 5-8-11-1969                | Displayed at S.P. Sacramento Station for Golden Spike Centennial.                                                                                                           |
| 5-12-1969                  | Moved into storage at Safeway Stores Food Distribution Warehouse, East Sacramento, Calif.                                                                                   |
| 11-1973                    | On public display at Safeway for Open House.                                                                                                                                |
| 6-30-1976                  | Moved to Car Shop #3, S.P. Sacramento, Calif. for covered storage.                                                                                                          |

## HISTORICAL PERSPECTIVE

1862 - 1899

The pioneer locomotive of the Central Pacific Rail Road of California was the historic "Governor Stanford" No. 1 which was built late in 1862 by Richard Norris & Son at Philadelphia, Pennsylvania. While not the oldest engine ever owned or operated by the Central Pacific and successor Southern Pacific Railroads, the "Governor Stanford" held the distinction as the first locomotive on the railroad's roster and additionally for conveying the first Central Pacific (C.P.) revenue freight train.<sup>1</sup>

The locomotive erecting shops of the Norris Brothers were established in Philadelphia in 1835 by Richard, William and Septimus Norris. The firm of Norris Brothers established at an early date a reputation for progressive design and powerful locomotives. The company emerged from reorganization in 1853 as Richard Norris & Son and in 1864 as Norris Lancaster. The firm ceased building locomotives in 1868.

It is generally agreed by contemporary Norris historians that the "Governor Stanford" was outshopped as Central Pacific Locomotive No. 1 in either November or December of 1862--the same year as the passage by Congress of the Pacific Railroad Act. Official locomotive rosters, specification sheets and classification listings occasionally differ between 1862 and 1863 as the year of construction for the locomotive.

The Central Pacific Rail Road of California was incorporated on June 28, 1861, and between January 8, 1863 and May 10, 1869, it constructed 690 miles of trackage between Sacramento, California, and Promontory, Utah, forming the western half of the first U.S. trans-continental railroad. The brain child of Theodore Dehone Judah, a Connecticut-born civil engineer, the monumental undertaking was backed by four Sacramento businessmen who became known as the "Big Four" of the Central Pacific--Leland Stanford, Mark Hopkins, Charles Crocker and Collis P. Huntington.

The first locomotive of the new Central Pacific Railroad was named in honor of the Company's president and then Governor of California Leland Stanford (1824-1893). A native of New England, Leland Stanford moved to California in 1851 where he successfully entered the grocery and provision business. He helped organize the Republican party in California and was elected governor of the state in 1863. From the time of his inauguration as Governor until 1890, Stanford held the influential position as President of the sprawling Central Pacific Railroad.

Outshopped by Richard Norris & Son late in 1862, the Locomotive "Governor Stanford" left Boston, Massachusetts on May 18, 1863, onboard the ship "Herald of the Morning".<sup>2</sup> Raids by Confederate warships on



sailing ships leaving from either Philadelphia or New York delayed the departure of the engine for several months until it could be safely sent down by rail from Philadelphia to Boston in order to board the "Herald of the Morning". Once out of the port of Boston, the ship likely sailed far into the mid-Atlantic away from potential Confederate raiders before heading south for the long voyage around Cape Horn. Finally, 127 days out of Boston, the "Herald of the Morning" arrived in San Francisco Bay on Monday, September 21, 1863 with the Locomotive "Governor Stanford" and much needed Central Pacific construction materials. The engine had been shipped knocked down and the crates were transferred at San Francisco to the river schooner "Artful Dodger" for the inland trip up the Sacramento River.

The various packing crates containing the locomotive arrived at Sacramento on October 6, 1863, where they were taken to a make-shift Central Pacific erecting shop at "K" and Front Streets. Here the work was begun on October 20th to reassemble the Norris engine. The locomotive frame, cab, pilot, cab fittings, smoke stack, tender tank, frame and trucks were all individually crated and an on-the-spot engineer directed the reassembly on a newly laid stub track. Additional machinist assistance was rendered where needed by the Sacramento iron and brass foundry firm of Goss & Lombard. The firm also built several flat cars for the Central Pacific pending the delayed arrival of the sailing ship "S. C. Grant" with rolling stock from the East.

Exactly one month to the day after its arrival in Sacramento, the "Governor Stanford" first operated under its own steam on November 6, 1863. Within three days, track layers completed connecting the rails from where the "Stanford" was erected to the main line of the new Central Pacific. The inaugural run from Front and "I" Streets out to the rail head at 22nd and "I" was postponed a day after the engine successfully ran only as far as 6th and "I" Streets. Following minor adjustments, the Central Pacific's first locomotive made several successful round trips to the end of track and back on November 11, 1863. Bedecked with hangers-on at all points, the "Governor Stanford" made several V.I.P. runs culminating in boisterous champagne toasts!

For over four months, the "Governor Stanford" was the Central Pacific's only locomotive until the C.P. "Pacific" No. 2 entered service on March 25, 1864. The engine pulled the C.P.'s first excursion using two newly outfitted passenger cars on March 21, 1864, and four days later on March 25th, the "Governor Stanford" hauled the railroad's first three revenue cars of freight consisting of granite from Brigham's Quarries to Sacramento. Soon after rails reached Junction (now Roseville), the one-spot had the honor of pulling the first scheduled revenue passenger train between Sacramento and Junction on April 15, 1864. The 18 mile trip was completed in 39 minutes each way at a speed of 24 miles an hour!

The "Governor Stanford" was purchased by the Central Pacific Railroad at a cost of \$11,406 plus \$2,282 freight and shipping charges. Outshopped as Norris boiler shop construction No. 1040, the engine was designed for versatile rail service as a conventional lightweight

4-4-0. By 1870, over half of the locomotives in existence in the United States were the 4-4-0 or American-type wheel arrangement. The details of the "Governor Stanford's" original specifications are obscure at best although it is known that the engine had the traditional Norris style headstone iron plate smoke box with the British crank door. Ornately cast in raised letters on the smoke box door was the name and location of the locomotive's builder. Period Central Pacific and Southern Pacific motive power records differ as to the original diameter of the drivers and size of the cylinders. The Central Pacific locomotive classification sheet of November 6, 1868, the first classification book of June 1876 and successive listings offer varying statistics on the cylinder sizes as either 15 or 16 x 22 inches and with driver diameters ranging from 54 to 57 inches. Like the majority of Central Pacific and Southern Pacific engines, the "Governor Stanford" received innumerable compromising alterations, substitutions and/or improvements at the road's main Sacramento Shops so that many of the locomotive's as-built specifications and component assemblies remain obscure, at best, to this day.

As Sierra-bound construction trains required heavier locomotives for the mountainous grades, the "Governor Stanford" was reassigned from passenger, freight and construction service to light freight and switching duties in the yards at Sacramento. Due either to a failure, upgrading or a wreck, the No. 1 was apparently re-boilered during the late 1860's at the Central Pacific's Sacramento Shops. After running off a Sacramento yard track in mid 1870, the 4-4-0 spent June 22 - 30, 1870 in the Sacramento Shops where a new main driving box and tender draw head were applied.

From July 1st until September 24, 1873, the "Governor Stanford" again received major modifications in the locomotive back shops of famed C.P. Master Mechanic Andrew Jackson Stevens. Two new steam chests, covers and valves, a bell ringer and stand, new safety valves, new tender frame, Rogers brakes and a boiler-mounted Krombig steam fire pump assembly complete with tender hose reel, suction hoses, strainers and couplings. Outfitted as a Sacramento fire engine and yard switcher, the Governor Stanford" was ready to extinguish small fires started about the yards by sparks from passing wood burning locomotives. The locomotive's September 24, 1873 return to service was enthusiastically reported in the local Sacramento Union:

REJUVENATED.— The locomotive Governor Stanford, No. 1, the pioneer of the Central Pacific Railroad Company's engines, having done long service as a switch engine in the yard in this city, was recently sent into the shops to be repaired and painted. Yesterday we noticed her on the track again, looking as handsome as when she first went into service.<sup>5</sup>

The only apparent local exception taken towards the "Stanford's" 1873 modernizations was the locomotive's innocuous self-ringing bell apparatus:

THOSE BELLS. — Among the diabolical inventions of the age may be classed the apparatus which rings the bell of the loco-

tive Governor Stanford, one of the yard engines employed in this city. It is as near perpetual motion as possible, and is so aggravatingly designed that the bell is not allowed to ring out in sonorous tones, but cut off short, as a dog who is about to indulge in a loud bark swallows the concluding note on a stone being shied at him. Another of the yard-engines, the Tulare, also has a self-ringing apparatus, but it hammers away merrily compared with the lugubrious tones of the Stanford's bell. A friend, who rooms on Front street, declares that the latter bell frequently gives him the blues. While laboring under this influence, he "adapted" from an African hymn the following, dedicating it to Assemblyman Freeman:

Down on the city front,  
Hear that mournful sound--  
All the railroad boys are fearing  
Stanford's nearly run to ground. 4

The engine's bell was soon replaced and the "Governor Stanford" once again merited Sacramento esteem --- this time as the protector of valued wood city structures during the disastrous Sacramento fire of August 11, 1875. Following minor repairs after breaking her driving wheel pins on July 28, 1877, the "Governor Stanford" continued active fire fighting service through at least September of 1880.

In the mid 1880's the locomotive was again completely rebuilt in the Sacramento Shops where the engine's third and present boiler was manufactured and installed. The early style lap-seam construction boiler was replaced with a transitional type triple riveted lap seam with a back strap boiler. The fire fighting pump was removed and dual injectors furnished boiler water in lieu of the boiler-mounted pump. Southern Pacific-marked castings and parts gradually dominated the locomotive's components: tender brake beam hanger, driver centers, pony truck wheels, tender water coupling, headlight brackets, stack collar flange, blow down handle, flag brackets, safety valve spring pads, tri-cock drip pan, journal boxes and lids, tender wheels, coupling pockets and front number plate. Coal instead of wood became the locomotive's fuel.

Gradually the traditional Central Pacific maroon or wine colors and extensive gold leafing and decorative filigree gave way to complete black paint schemes with minimal gold leaf or white striping. Until 1893, the locomotive was used in fairly regular service as a Sacramento yard switching engine. However, in 1891, the "Governor Stanford" was renumbered from No. 1 to No. 1174 as part of an organized system wide Southern Pacific renumbering program.

During the financial panic of 1893, the Mechanics Institute hosted a gala Mid-Winter Fair at San Francisco and the "Governor Stanford" and Central Pacific No. 3 "C.P. Huntington" were sent down from Sacramento for the occasion. It is likely that the locomotive was renumbered from No. 1174 to C.P. No. 1 "Governor Stanford" for display at the 1893 Mid-Winter Fair. The retention of the locomotive



after 1892 is doubtless due to the 1893 Fair and the untimely death on June 21, 1893, of Leland Stanford. Reports of the impending gift of the locomotive to the Leland Stanford Junior University coincide closely with the mid 1890's founding of the Palo Alto campus. The "Governor Stanford", however, remained at Sacramento until early in 1899 when it received major cosmetic renovation.

Having been heavily used, modified, rebuilt and reboilered throughout over 30 years of service, the tired and outdated locomotive was finally retired from service in 1895 and stored in the S.P. Sacramento Shops. At the request of Mrs. Leland Stanford, the Central Pacific Board of Directors at an early 1899 meeting passed a resolution giving the locomotive to Mrs. Stanford.<sup>5</sup> Between February 28th and March 13, 1899, the "Governor Stanford" was spruced up, completely repainted black and appropriately gold leafed as the Central Pacific Locomotive No. 1. During the 1890's the engine received a more modern Westinghouse air pump, staved display wood pilot and a tender which was hurriedly pieced together for non-operating display purposes. The present tender consists of a replacement iron frame from 1888 C.P. Rhode Island Locomotive No. 1728, the tank from 1878 C.P. Locomotive No. 1307 and Schenectady style trucks containing numerous S.P. - C.P. replacement parts and substitute springs.

As reported in The Daily Palo Alto the "Governor Stanford" was brought down from Sacramento to Palo Alto on Saturday, April 8, 1899, storage on campus and eventual display inside the Stanford University Museum:

#### The "Governor Stanford."

The "Governor Stanford," the first passenger engine on the Central Pacific, was brought down to Palo Alto from Sacramento on Saturday. The "Governor Stanford" was brought around the Horn by steamship and set up on the Coast, being named for Governor Stanford. At that time the railroad extended only from Sacramento to Auburn. When the line was extended over the Sierra Nevadas the "Governor Stanford" was the first engine to cross the mountains. The engine was exhibited at the Mid-winter Fair, together with a typical modern locomotive. It was recently condemned by the railroad authorities and would have been destroyed, but Mrs. Stanford secured it. If possible, it will be placed in the Museum. If this is not practicable a shed will be built to protect it.<sup>6</sup>

1899 - 1977

In March of 1899, the locomotive "Governor Stanford" was presented by Jane Lathrop (Mrs. Leland) Stanford to Stanford University

"...as an interesting souvenir of early railroad days in this State."<sup>7</sup>

As Stanford Museum space was unable to immediately accommodate the

50 foot long 40 ton locomotive, the newly repainted engine was stored on the Palo Alto campus in an open field and later in a nearby wooden shack built above it at the rear of the museum. Finally, in late 1916, a hole was cut through the brick and cement wall of the museum building and the engine was cabled and jacked into the museum. Begun in 1891, the Leland Stanford Junior Museum was supported in large part through the personal income of Mrs. Leland Stanford in memory of her only son who died in 1884 at an early age. The structure was the first large scale building of reinforced concrete located west of the Mississippi River and for many years was the largest private museum in the world.

The San Francisco fire and earthquake of April 1906 caused severe damage to the museum building and artifacts and started a 40 year downhill trend of museum vandalism and neglect. The under parts of the "Governor Stanford" began to badly rust due to a lack of proper maintenance and painting. As early as 1919, visitors to the museum observed

"...literally hundreds of initials carved on the pilot spokes, on the cab and scratched onto the paint of the locomotive." 8

Irreplaceable cab fittings, valve handles and gauges began to rapidly disappear as the locomotive was subjected to vandalism by students. 9 From 1945 until 1954, the Stanford Museum was formally closed for reorganization.

In the summer of 1951, several Stanford University students including Brad Reese, Bob Stein and Fletcher Taylor began taking interest in the engine. Together they secured permission to enter the closed museum to volunteer their time to polish the brass parts of the locomotive. Spurred by the anticipated reopening of the museum, other Stanford railfans volunteered hours to replace broken glass, construct new cab window frames, install contemporary replacement cab gauges and some valve handles and completely repaint the locomotive from its previous black appearance to a fictitious brightly colored paint scheme in an attempt to depict an early style Central Pacific engine.

In early 1963, the Stanford Museum approached Gilbert H. Kneiss of the Railway and Locomotive Historical Society, Pacific Coast Chapter to find an alternate home for the hundred year old locomotive. The museum space which the "Stanford" occupied was required immediately for building alterations and remodeling as a display area for Greek and Egyptian vases, jewelry and other artifacts. Successive loan agreements placing the care of the locomotive in the custody of the R&LHS, Pacific Coast Chapter, were executed with the Board of Trustees of Stanford University on May 1, 1963, May 1, 1967, and August 25, 1968. In 1969, the Pacific Coast Chapter executed a loan agreement with the State of California Department of Parks and Recreation to provide for the locomotive's permanent public display in the California State Railroad Museum at Old Sacramento State Historic Park.

In late May 1963 the rear Stanford Museum wall was once again removed and the historic "Governor Stanford" was crane loaded by Bigge Drayage Company and moved to Richmond, California, for secure covered storage. At Richmond the locomotive was stored in the caboose shop and later the locomotive back shops of the Atchison, Topeka & Santa Fe Railway. During that time the engine was kept secure and covered with the unfortunate exception of the unauthorized removal of one of the locomotive's two marked builder's plates. Santa Fe mechanical crews reconnected the valve gear on the engine which had apparently been disconnected since the 1890's.

In mid 1967, the "Governor Stanford" was moved into more secure locked storage inside the former Key System Railway Inspection Barn at Oakland, California. Here the engine rested until crane loaded by McLaughlin Draying Company on May 1, 1969, for removal to the Sacramento General Shops of the Southern Pacific. In the same shop bay where the locomotive was restored prior to its gift to Stanford University, the 1862 locomotive was thoroughly cleaned and partially repainted for five days by Southern Pacific shop forces. The historic engine was placed on temporary public display at the Sacramento Southern Pacific Passenger Station from May 8 - 11, 1969, upon the centennial of the driving of the golden spike of the transcontinental railroad at Promontory, Utah. Following interim inside storage at a Sacramento Safeway Stores Distribution Warehouse, the "Governor Stanford" was once again moved into the Southern Pacific Sacramento Shops for secure covered storage while awaiting the impending completion of the California State Railroad Museum History Building only several hundred feet away.

From its humble erection at Front and "K" Streets, the "Governor Stanford" has returned to Sacramento for restored interpreted public display within a few feet of where it was first placed under steam in November 1863.

## NOTES

1. C.P. - S.P. Locomotives older than the "Governor Stanford" include T&NO 4-40 No. 505 built by Niles in 1854 and EP&SW 4-40 No. 1 built by Breese-Kneeland in 1857.
2. Sacramento Union, September 22, 1863.
3. Sacramento Union, September 25, 1873.
4. Sacramento Union, February 5, 1874.
5. San Francisco Bulletin, April 9, 1899.
6. The Daily Palo Alto, April 12, 1899.
7. San Francisco Bulletin, April 9, 1899.
8. Gerald M. Best to Denny S. Anspach, letter, June 27, 1969.
9. Stanford Alumni Review, November 1951.



Architectural floor plan showing a building layout with various rooms and dimensions. The plan includes a large central hall (17850#) and several smaller rooms, including a kitchen (10150#), a dining area (17850#), and a living area (10150#). Dimensions are provided for various sections and rooms.

Key dimensions and labels include:

- Overall width: 50'-3"
- Overall length: 19'-10"
- Room dimensions: 10'-10", 14'-6", 7'-1", 5'-0", 7'-0", 7'-8", 3'-1", 3'-8", 4'-0", 6'-0", 30", 55", 25 1/2"
- Room numbers/labels: 10150#, 17850#, 6000# TYP, 10150#

35, 700 LBS.  
20, 300 LBS.  
56, 000 LBS.  
80, 000 LBS.

[illegible]

# SPECIFICATIONS

Builder: Richard Norris & Son  
 Place: Philadelphia, Pennsylvania  
 Date: Late 1862  
 Construction Number: 1040  
 Type: 4-4-0 American  
 Gauge: 4'-8 $\frac{1}{2}$ "  
 For: Central Pacific Railroad Co.  
 Number: 1  
 Name: Gov. Stanford  
 Service: Passenger & Freight  
 Cost: \$11,406  
 Freight: \$2,282

|                  | <u>1862</u>  | <u>1899</u> |
|------------------|--------------|-------------|
| Tractive Effort: |              |             |
| Boiler Pressure: |              |             |
| Weight:          |              |             |
| On Engine Truck: |              | 20,300 lbs. |
| On Drivers:      |              | 35,700 lbs. |
| Engine Total:    |              | 56,000 lbs. |
| Wheel Base       |              |             |
| Lead Truck:      | 5'-0"        | 5'-0"       |
| Drive Wheel:     | 7'-8"        | 7'-8"       |
| Total Rigid:     | 19'-8"       | 19'-8"      |
| Boiler           |              |             |
| Type:            | Wagon top    | Wagon top   |
| Material:        | Steel        | Steel       |
| Inside Diameter: |              | 43"         |
| Dome             |              |             |
| Casing:          | Iron         | Iron        |
| Beads:           | Brass        | Brass       |
| Jacket           |              |             |
| Material:        | Russian Iron | Iron        |

# Jacket (Continued)

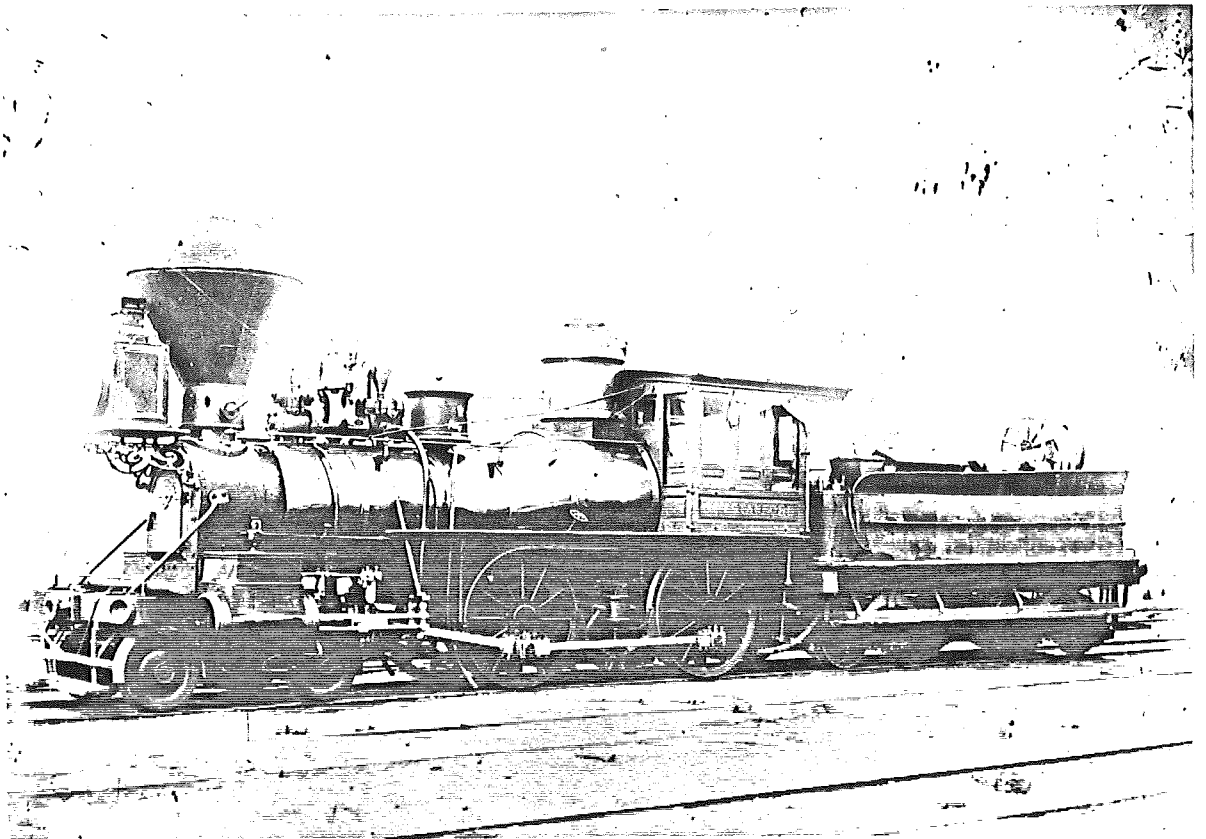
|                  |                 |                       |
|------------------|-----------------|-----------------------|
| Bands:           |                 | Iron                  |
| Safety Valve:    | 2               | 2                     |
| Fire Box         |                 |                       |
| Material:        | Steel           | Steel                 |
| Length:          |                 | 4'-8"                 |
| Width:           |                 | 2'-11"                |
| Height:          |                 | 4'-11 $\frac{1}{2}$ " |
| Tubes/Flues      |                 |                       |
| Material:        |                 | Steel                 |
| Number:          |                 | 148                   |
| Diameter:        |                 | 2"                    |
| Length:          |                 | 9'-9 $\frac{1}{2}$ "  |
| Fuel:            | Wood            | Coal                  |
| Heating Surfaces |                 |                       |
| Fire Box:        |                 | 88.15 sq. ft.         |
| Tubes:           |                 | 758.76 sq. ft.        |
| Total:           |                 | 846.91 sq. ft.        |
| Grates           |                 |                       |
| type:            | Iron bar        | C. iron               |
| Ash Pan          |                 | Iron/Double door      |
| Cylinder         |                 |                       |
| Number           | 2               | 2                     |
| Diameter         |                 | 16"                   |
| Stroke           | 22"             | 22"                   |
| Valve Motion     | Stephenson Link | Stephenson Link       |
| Steam Chests     |                 |                       |
| Casing:          |                 | Iron                  |
| Covers:          |                 | Iron                  |
| Guides:          | Iron            | Iron                  |
| Drivers          |                 |                       |
| Diameter         |                 | 57"                   |

Drivers (Continued)

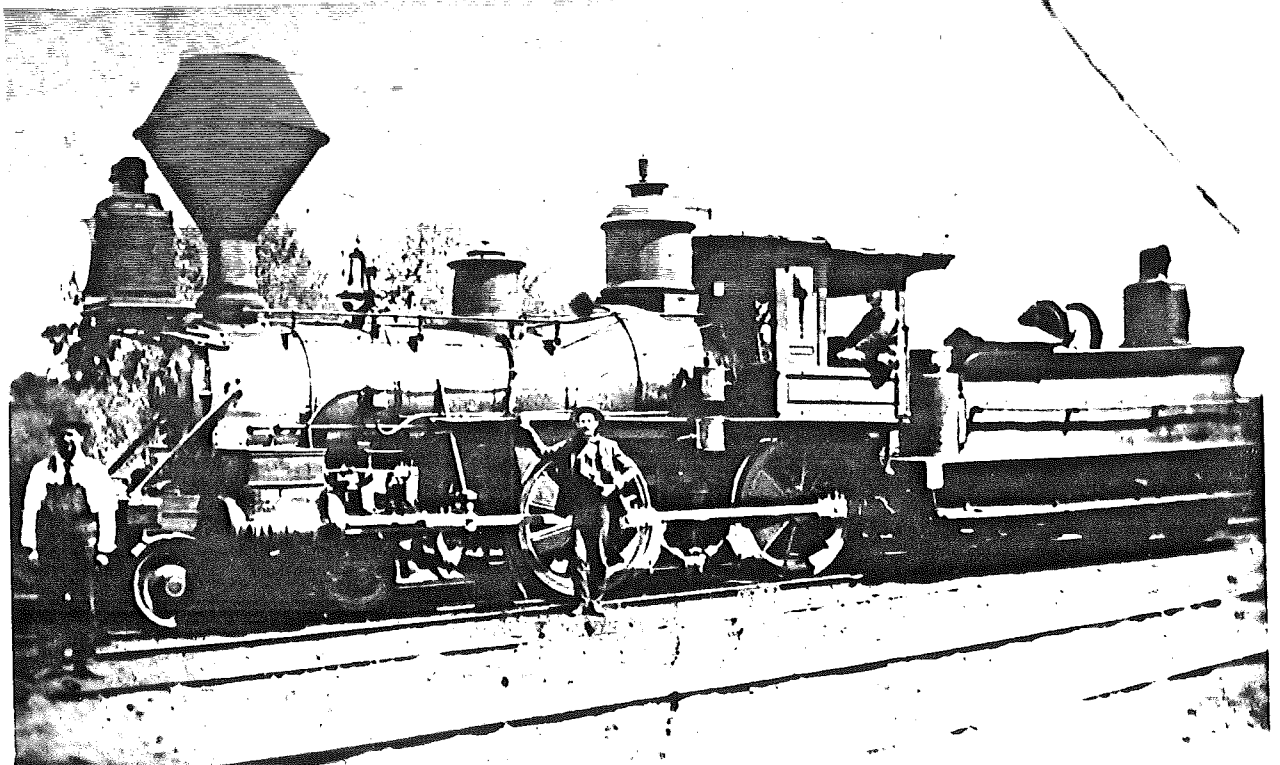
|                 |                     |                       |
|-----------------|---------------------|-----------------------|
| Center Diameter |                     | 57"                   |
| Center Mat'l.   | C. Iron             | C. Iron               |
| Tires           |                     |                       |
| Type:           | Steel/Flange        |                       |
| Size:           |                     | X 3"                  |
| Wheel Cover:    | Iron                | Iron                  |
| Throttle:       | Balance, in dome    | Balance, in dome      |
| Smoke Stack     | Funnel              | Diamond               |
| Water Supply    | cross head pump (2) | Injector (2)          |
| Sand Dome       |                     |                       |
| Casing:         |                     | Iron                  |
| Beads:          |                     | Iron                  |
| Cab:            |                     |                       |
| Pilot:          | Wood                | Wood                  |
| Lead Truck      |                     |                       |
| Type:           | Chilled C. iron     | Chilled C. iron       |
| Diameter        |                     | 26"                   |
| Running Board   |                     |                       |
| Type:           | Wood                | Wood                  |
| Nosing:         |                     |                       |
| Gauges:         | 1-steam             | 1-steam, 1-duplex air |
| Gauge Stand:    |                     | C. Brass              |
| Flag Stand:     |                     |                       |
| Hand Rails:     |                     | Iron                  |
| Number Plate:   |                     | C. iron               |
| Headlight:      |                     | Kerosene              |
| Tender          |                     |                       |
| Type:           | 8 wheel rectangular |                       |
| Frame:          | wood                | iron                  |

Tender (Continued)

|                 |         |              |
|-----------------|---------|--------------|
| Truck Frame:    | W. Iron | W. Iron      |
| Wheel Diameter: |         | 30"          |
| Brakes:         | Manual  | Westinghouse |
| Brake Beam:     | Wood    | Iron         |
| Tank            |         |              |
| Height:         |         |              |
| Width:          |         |              |
| Length:         |         |              |
| Water Cap:      |         |              |



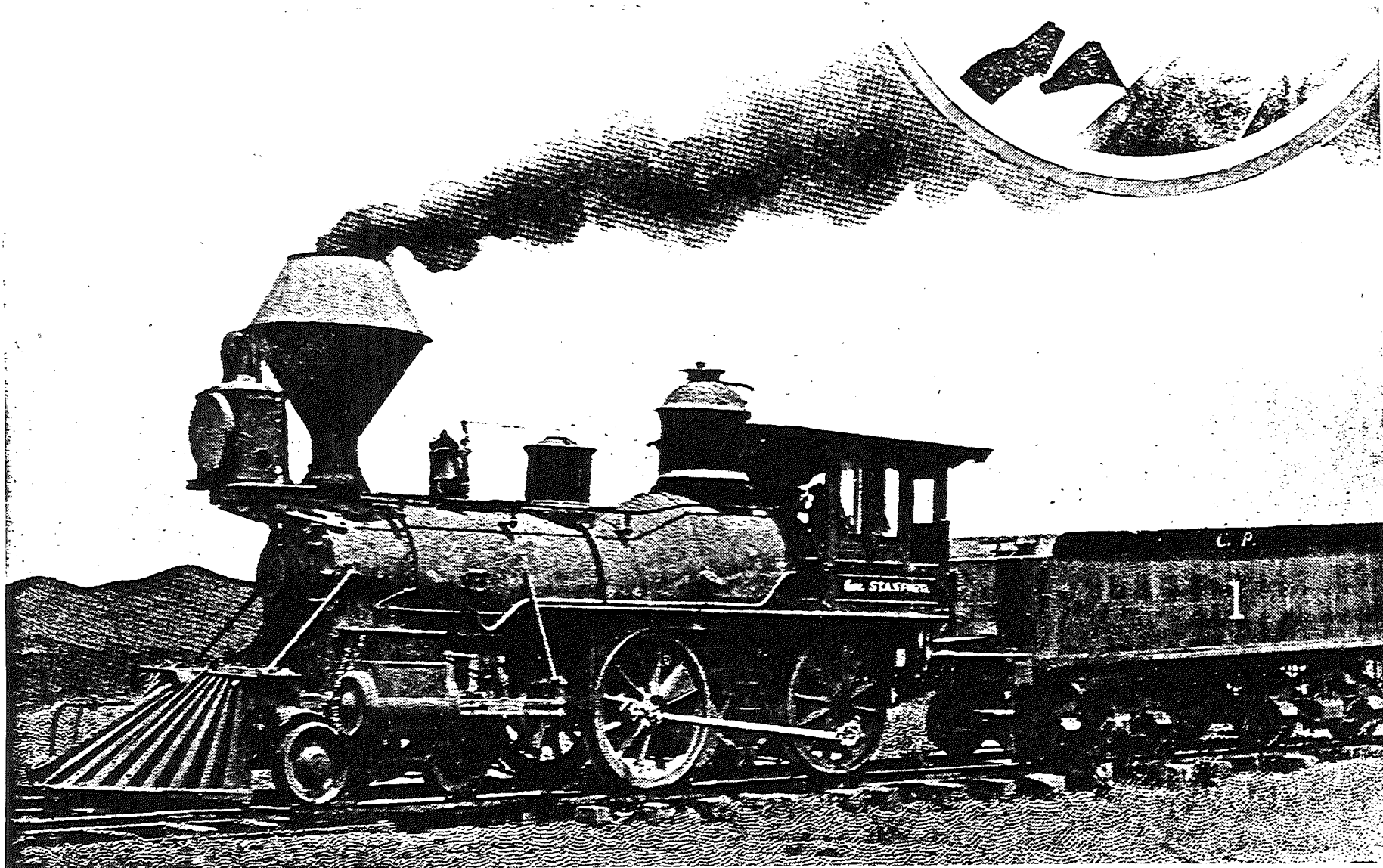
Sacramento, ca. 1882-1891 9/73



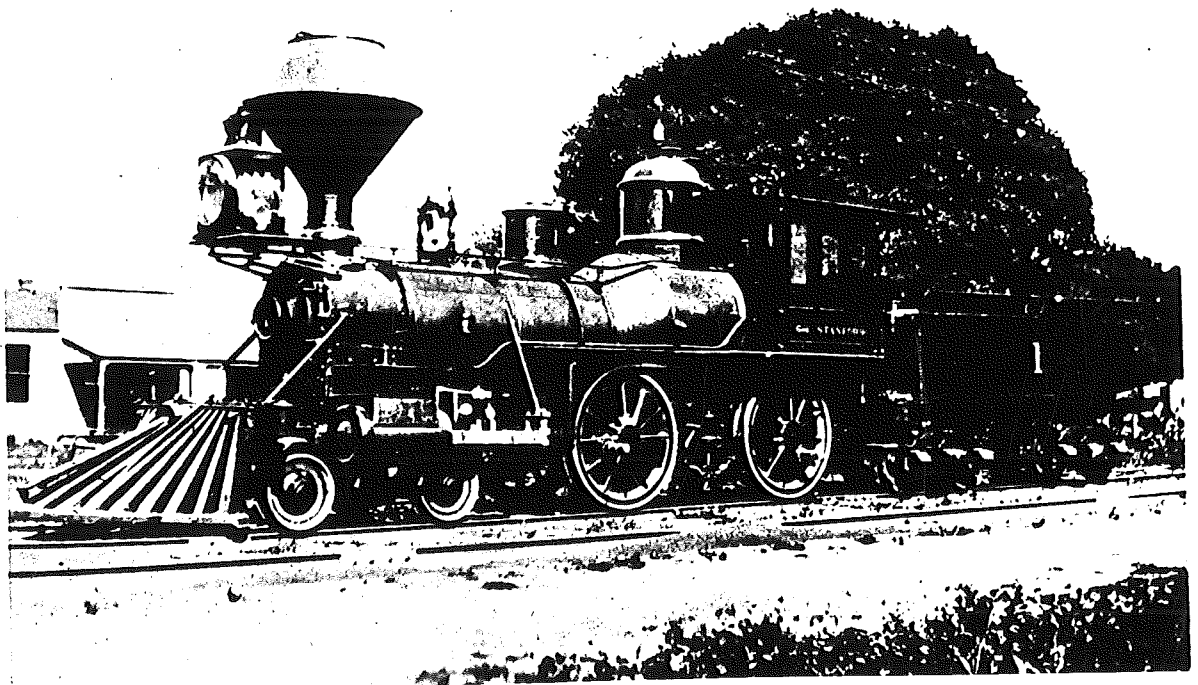
Sacramento, ca. 1882-1891

Reversed



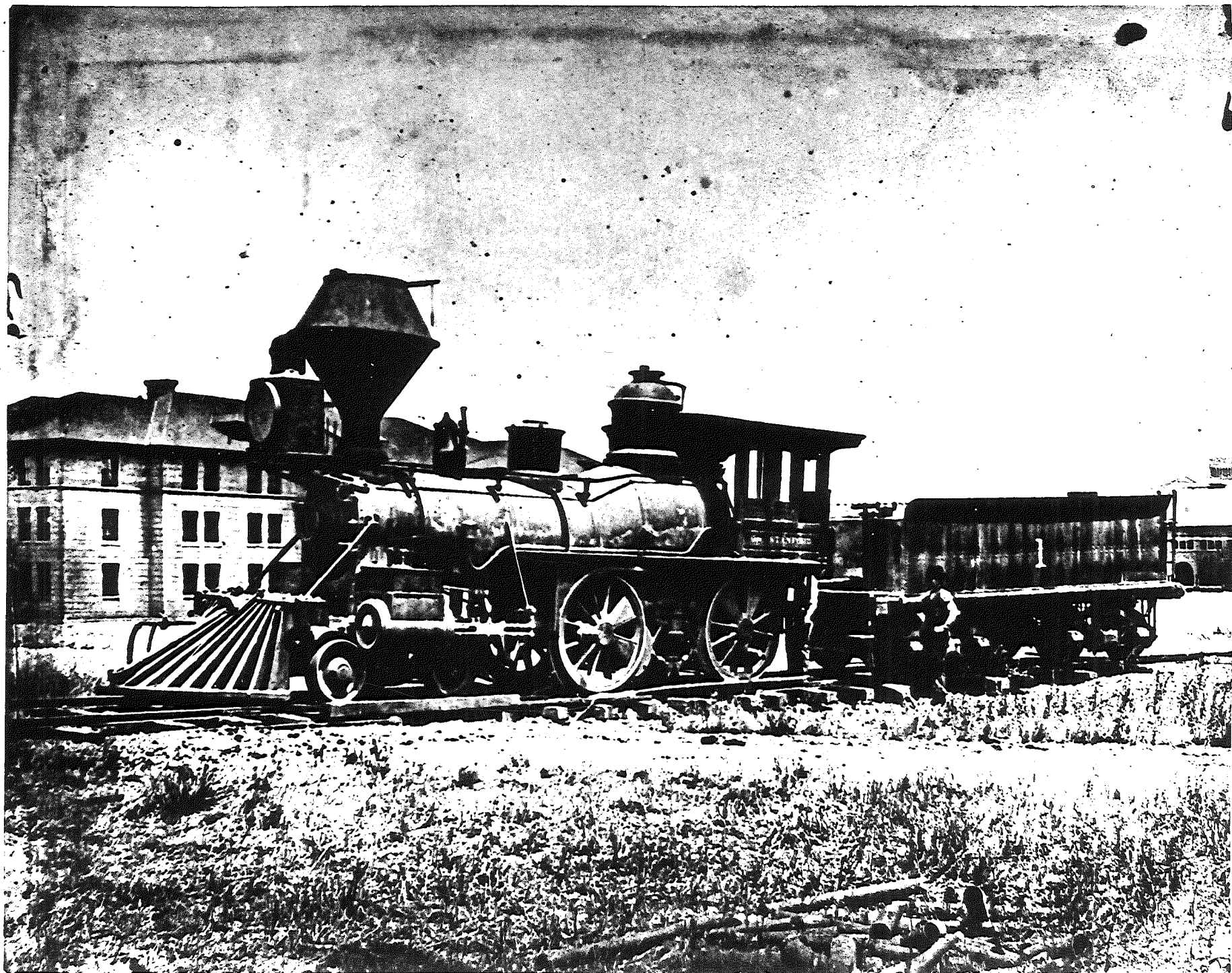


Stanford University, 1916

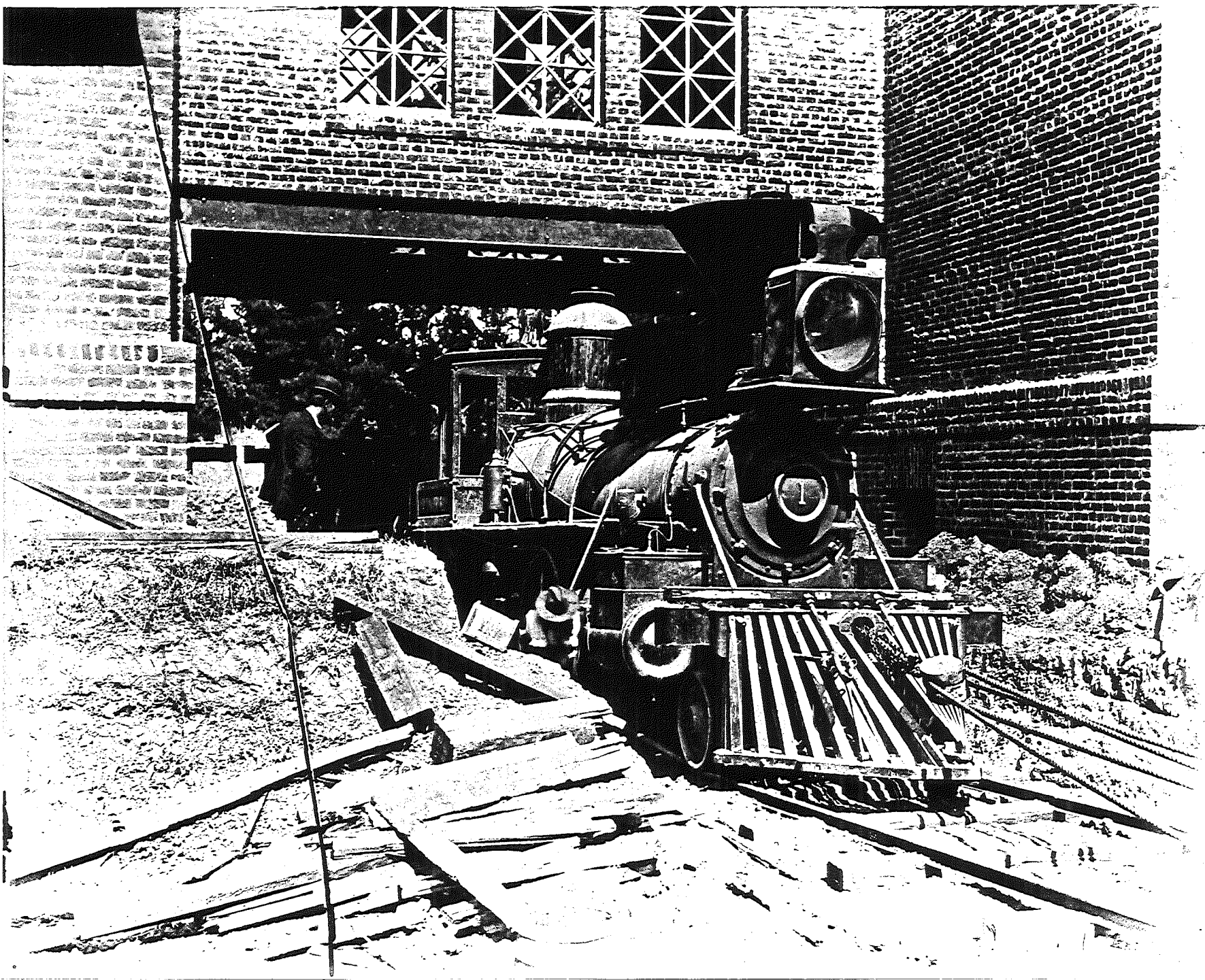


Sacramento, 1891

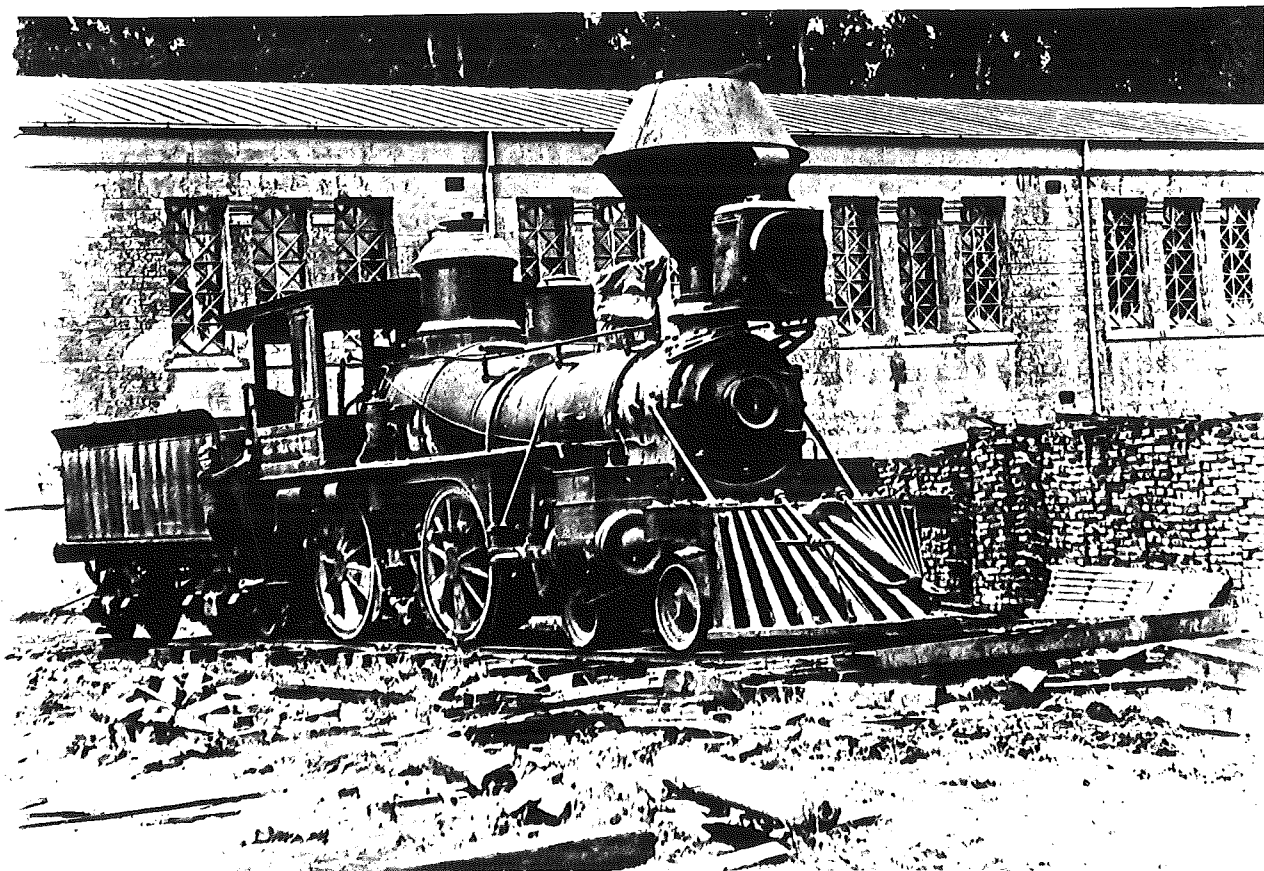
Stanford University, 1916



Stanford University, 1916



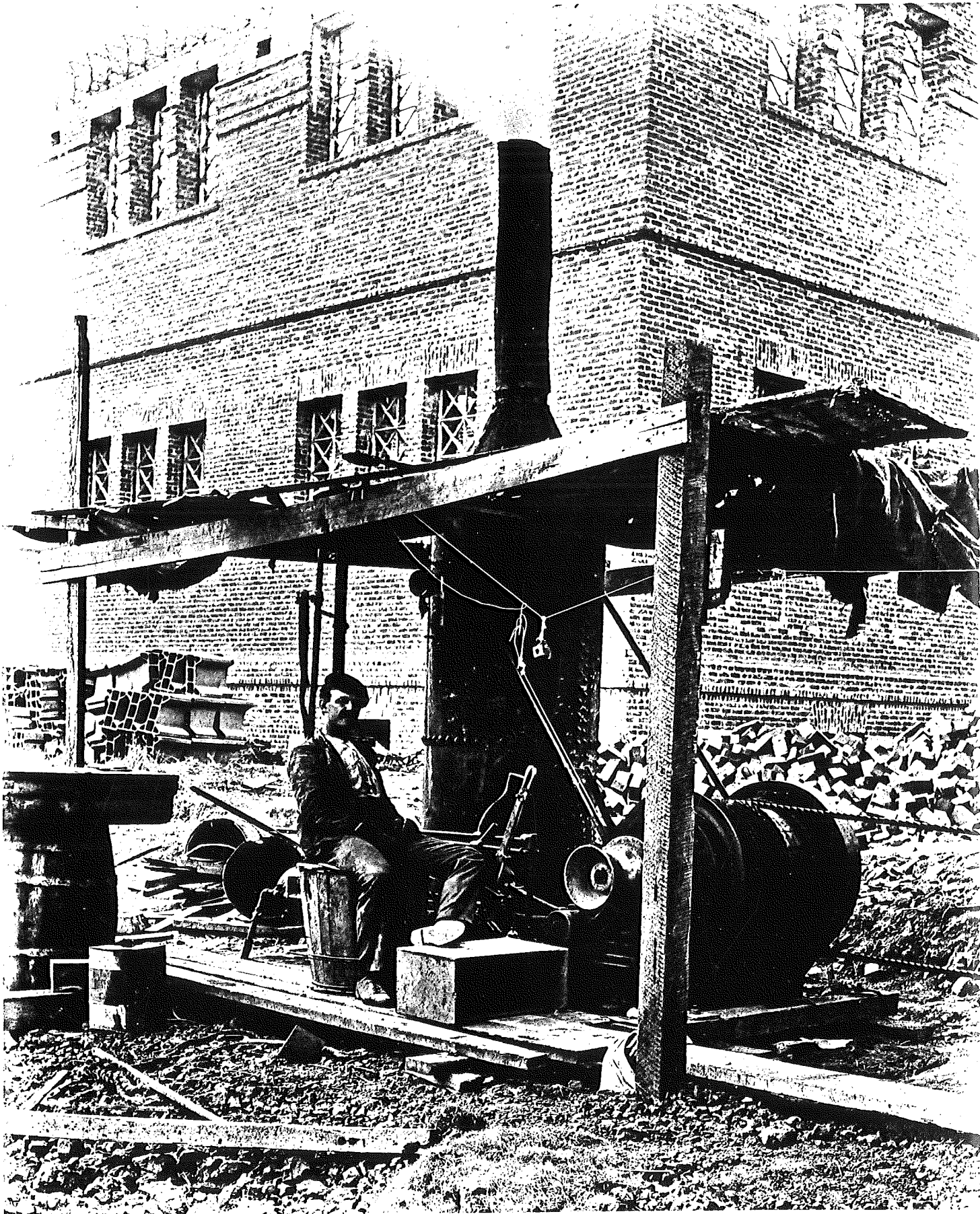




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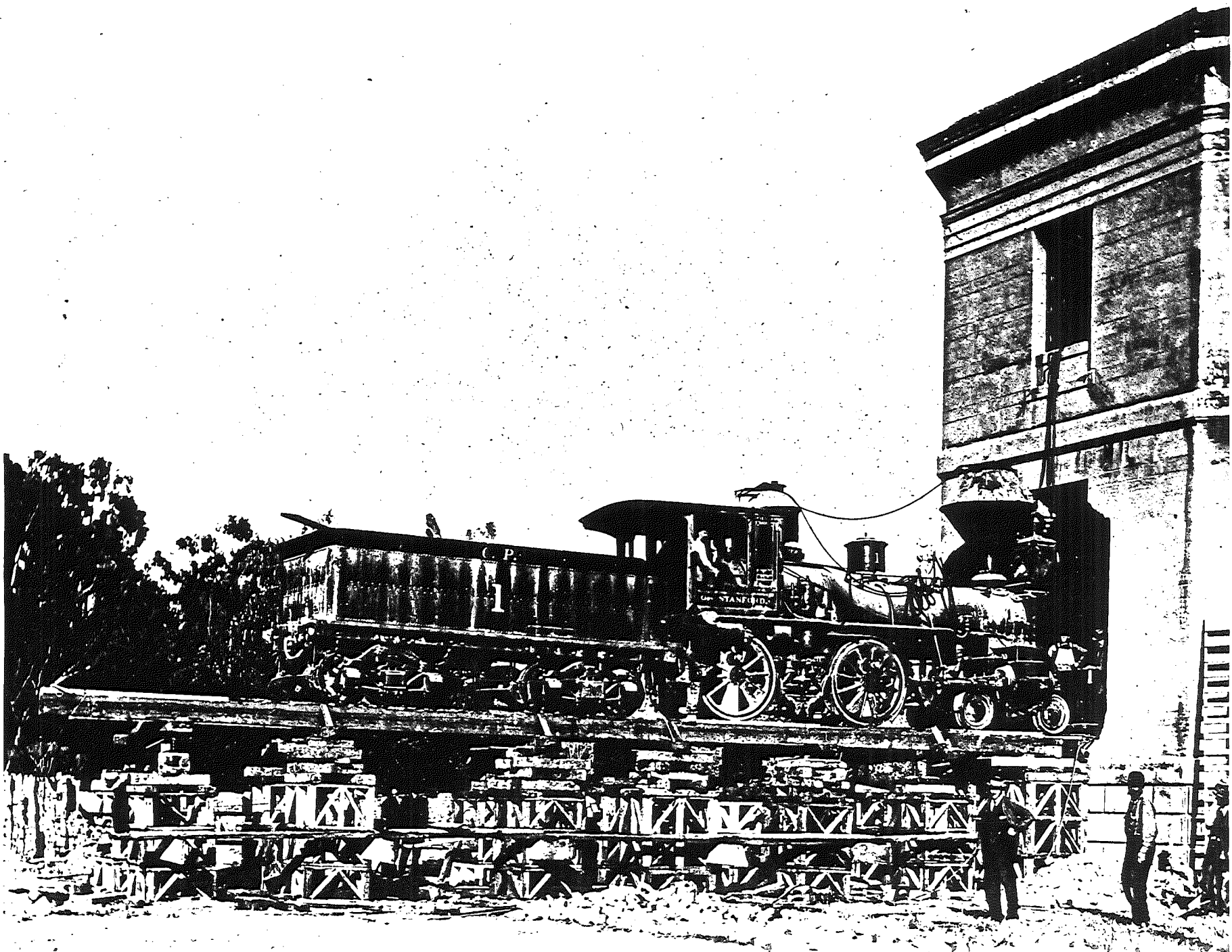


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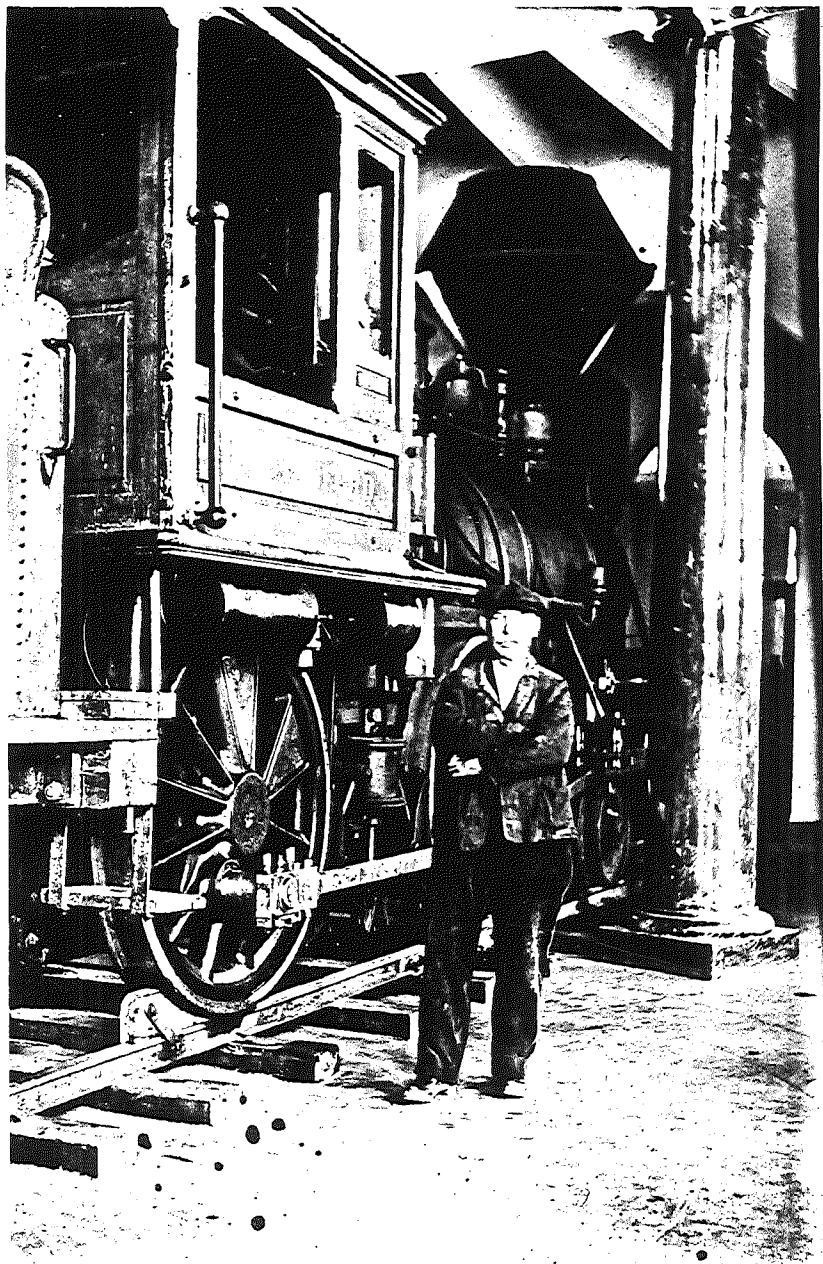


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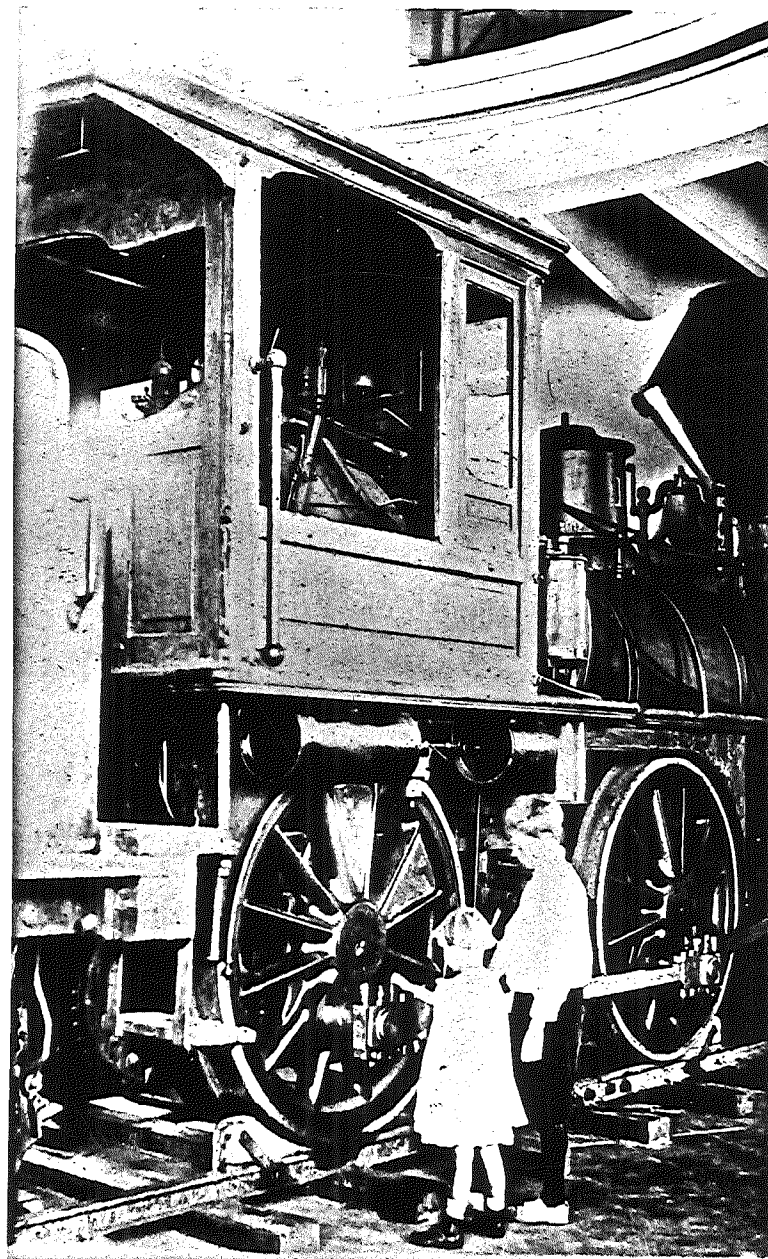
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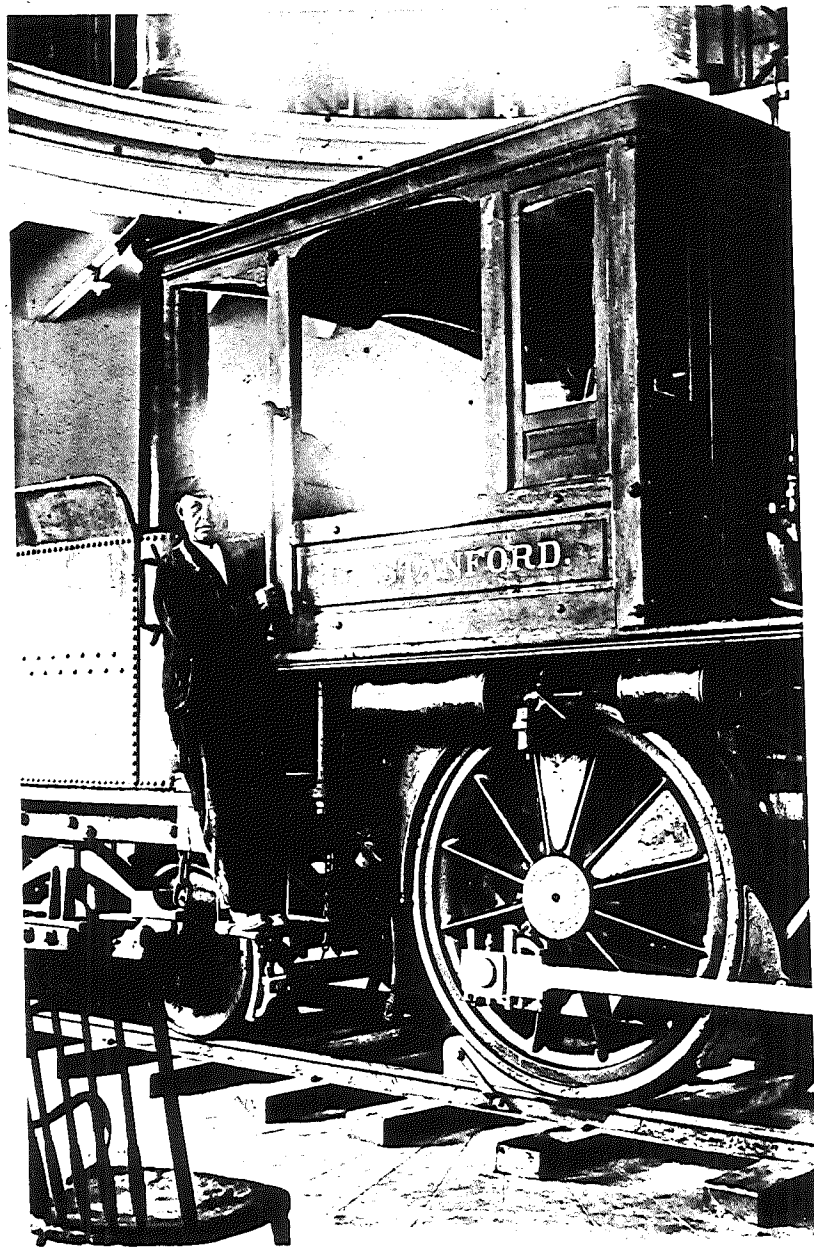




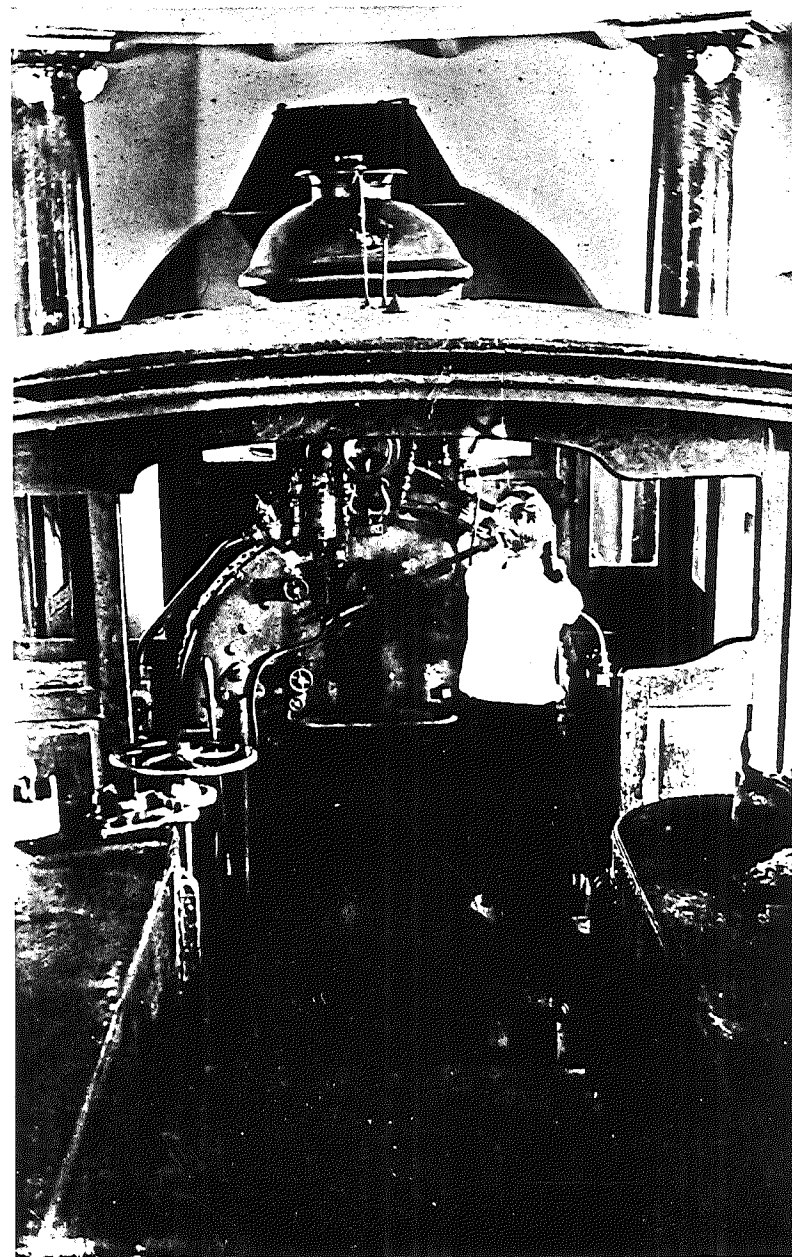
Stanford University, 1920's



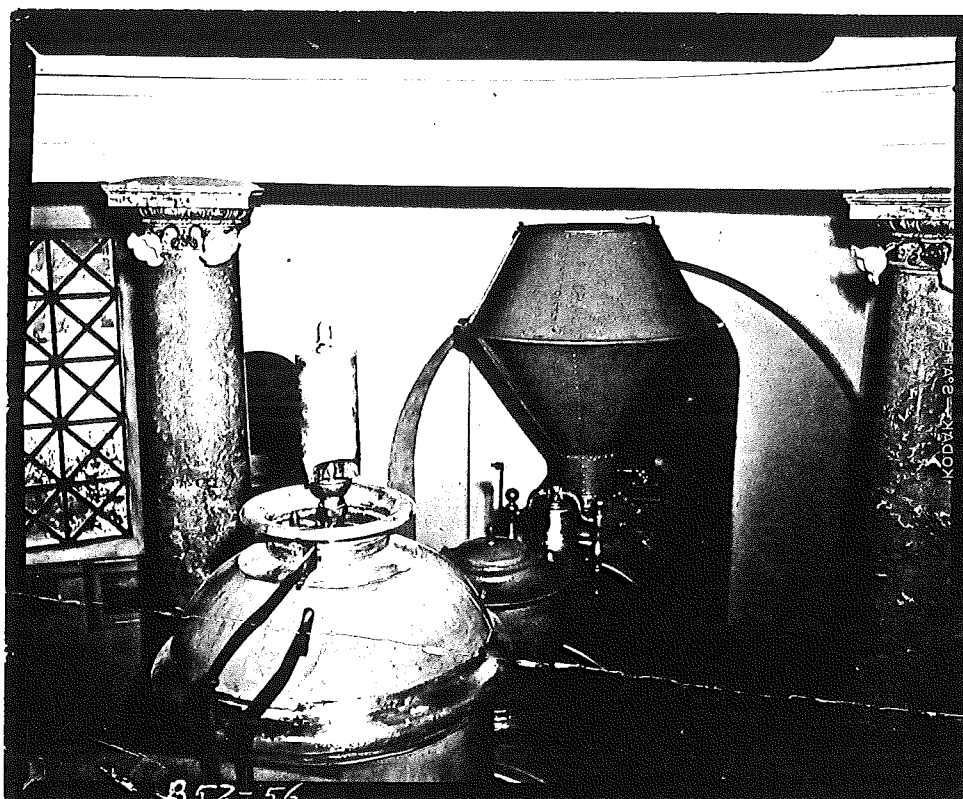
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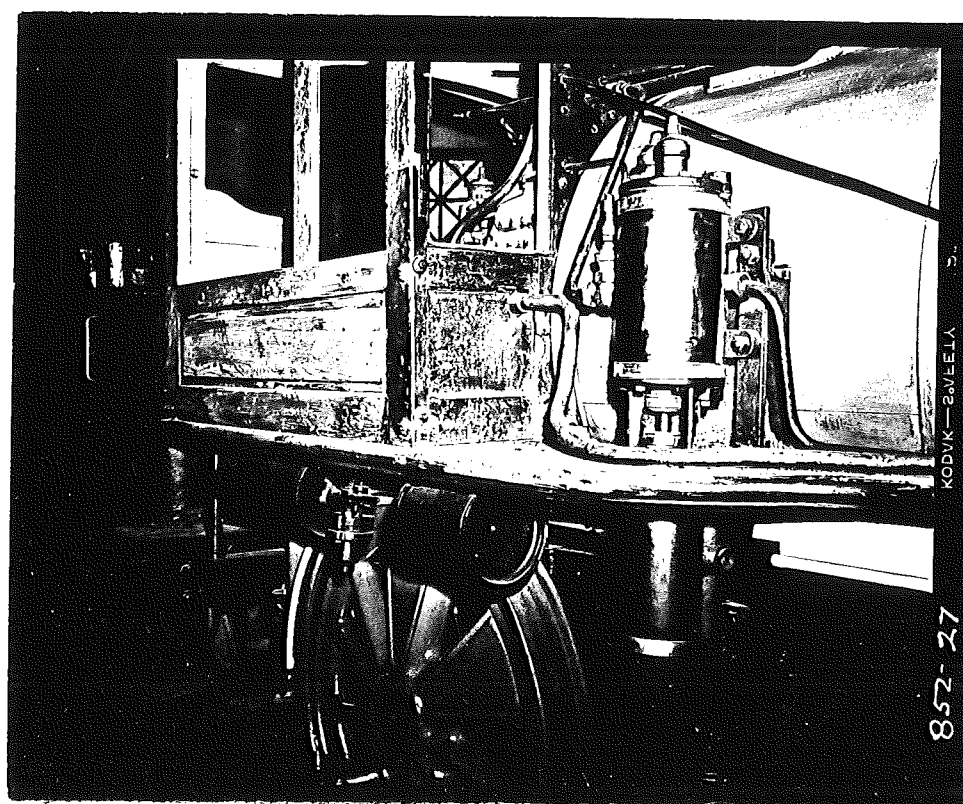
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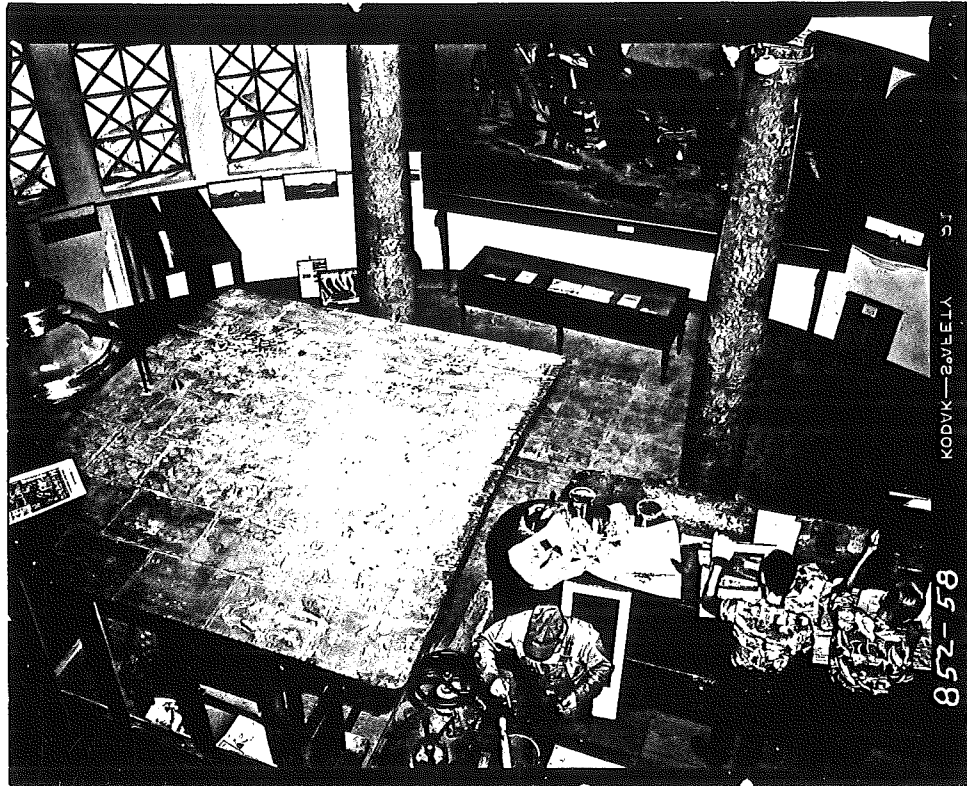
Stanford University, 1920's



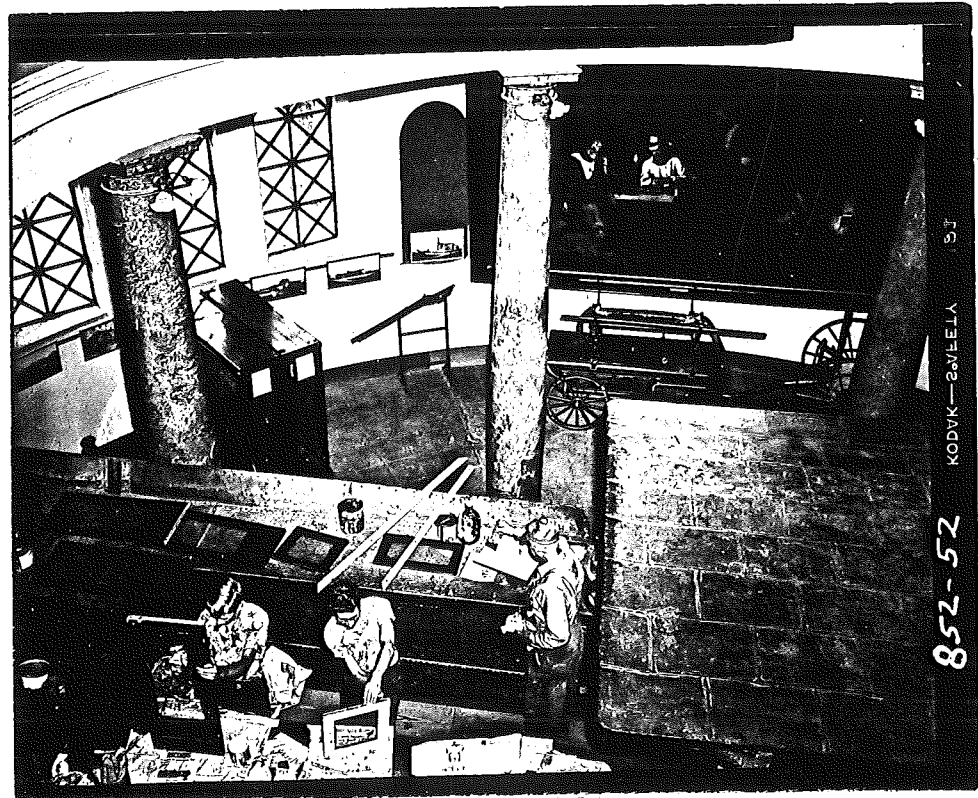
852-56  
Stanford University, 1951-1954



852-27  
Stanford University, 1951-1954

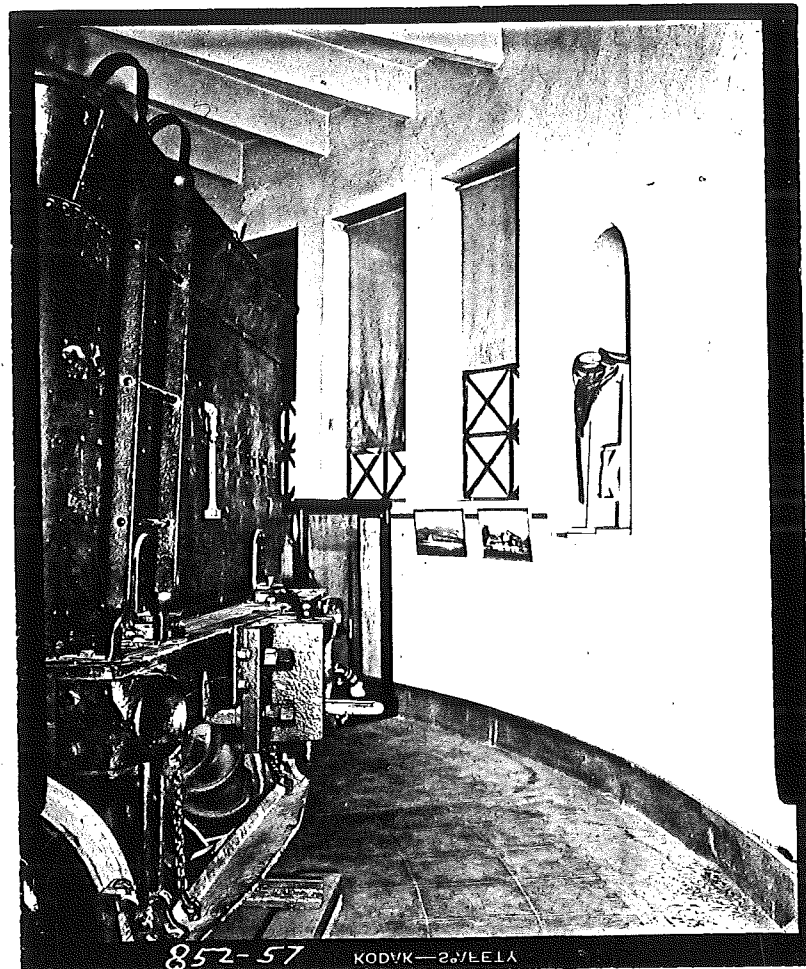


Stanford University, 1951-1954

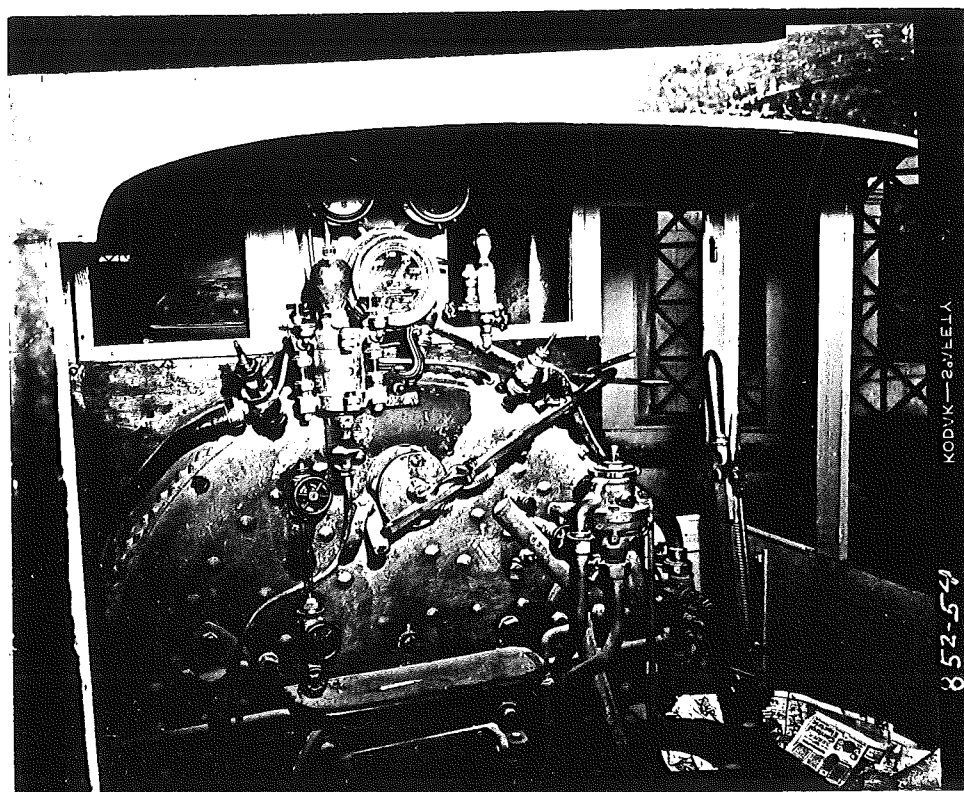


Stanford University, 1951-1954





852-57 KODAK-SAFETY  
Stanford University, 1951-1954



852-54 KODAK-SAFETY  
Stanford University, 1951-1954

## COMPONENT ANALYSIS

Boiler: Original boiler was Norris lap seam construction; new boiler manufactured and installed date 1860's at Central Pacific Sacramento Shops, patched 1873. Reboilered ca. mid 1880's by Southern Pacific Sacramento Shops. Present boiler is triple riveted lap seam with a back strap; working boiler pressure approximately 130-140 pounds per square inch. No visible repair work has been made on the present boiler other than 15-20 stay bolt replacements; these are evident by tell-tale holes drilled into the center of stay bolts. All inspection and clean outs plugs were in place until removed by the State of California to permit proper ventilation of the boiler and to stop corrosion and further interior decay. Boiler braces originally painted black.

Jacket: Original jacket was Russian Iron, naturally lacquered and polished. Jacket has been replaced several times during the life of the locomotive. Present common iron jacket presumably applied ca. 1893 by S.P. The jacket is in generally good condition; slightly rusted on bottom since 1899 due to lack of proper painting.

Jacket bands: 6 Iron bands; present bands are S.P. replacements slightly wider than original Norris bands. Bands are in generally good condition; rusting on bottom due to lack of proper painting since 1899.

Steam dome: Original dome had two safety valves of the lever and spring type which were adjustable from the cab with a side-mounted single-chime whistle. Dome originally jacketed with one piece shroud comprising an iron jacket, iron dome, brass beading and flared collar soldered together. Original style dome retained upon second reboiling; dome was relocated closer to the rear of the locomotive by approximately 12 inches. The present dome on the third boiler is approximately in the same location as on the second boiler. The



Boiler (Continued)

safety valves were modified in 1873 to one lever and spring (old style) and one safety pop valve (new style). Smaller whistle applied 1873; the whistle was relocated from outside to inside the flared collar and was replaced with a smaller single chime whistle. Present brass whistle is three chime style 1954 replacement; the engine never had this style while in service on C.P. 1863-1899. Present flared collar is ca. 1880's brass replacement to accommodate two safety valves and whistle. Inside of shroud chalked with S.P. order No. 339.

Sand dome: Original iron dome was typical Norris-design pedestal-mount construction; lid had acorn-style brass handle. Original dome reinstalled late 1860's on second boiler. Present dome applied mid 1880's is base rather than pedestal-mounted. Sand dome lid and cover are presumably original; dome lid handle is different style S.P. replacement. Sanders are gravity fed to front drivers. Numbered "1" on side of dome by September 1873.

Bell: Original was highly ornate beaded brass bell with scroll-sided stand. Stand replaced mid 1873 upon addition of water pump with cast iron high rise frame; two cast iron standards were installed on top of the frame to support the bell yoke. Bell replaced 1870's; automatic bell ringer added. Converted 1880's to conventional iron stand. Present bell and stand installed ca. 1899 by S.P.; stand is unlike any previous bell assemblies used on the locomotive.

Smoke stack; Original was funnel style with conventional cinder screen; top spark deflector plate added 1860's. Changed 1870's to diamond-style stack with jacketed stack column for the retention of cinders; included left side clean out plug. Jacket removed by 1880's leaving conventional diamond-style smoke stack. Smoke stack base iron casting is possibly original Norris.

### Boiler (Continued)

Headlight: Presumably operated 1860's without headlight; lamp installed by 1873. Present old style headlight is 1890's replacement: kerosene oil burning apparatus complete with silver plated parabolic reflector. Present lamp is 1860's ornate style with bar brackets for headlight black-out plate. Present headlight brackets are plain style cast iron S.P. manufacture installed late 1880's; first two bracket styles were scrolled cast iron Norris and/or C.P. manufacture. Headlight mounting platform is wood plank. Headlight assembly is complete under heavy paint. Marked inside for S.P. order No. 339.

Smoke box: Original replaced ca. mid 1880's with present style smoke box. Original front consisted of iron sheet and cast iron head stone-style door with straight bottom and side edges, and rounded top; ornately cast in raised characters were the builder's name and location. Original door had left side handle; door opened by rotating cast iron handle 90 degrees. Present front is round S.P. manufacture cast iron bolted to smoke box with cast iron hinged door secured by 8 cast iron door dogs. Smoke box inspection door secured by two bolts on box front; S.P. 1890's manufactured cast iron number plate affixed to smoke box door. Plate bears "1" two S.P. cast iron flag holders and two wrought iron classification lamp brackets applied 1890's on each side of smoke box.

Boiler checks: Originally had two with cast iron bases and brass casings; left hand side removed 1873 when added boiler-mounted fire pump furnished boiler water in lieu of crosshead pumps. Converted mid 1880's to present style dual injectors with side boiler checks; right side iron casing removed between 1916-1936.

Pilot boiler braces: 2 wrought iron, identical to original

Boiler (Continued)

style.

Running boards: Originally two wood with metal nosing; present boards are 1890's S.P. plain replacements. Left side is sectionalized for no apparent functional purpose.

Handrails: 2, Iron rails with iron post mounts, riveted brass rail ends intact; originality questionable.

Fire Box: At least third fire box installed in engine; very good condition with no visible repairs. Box modified since 1870's with rocker grates to burn coal; fire arch presently missing. Over a dozen flues are plugged with debris from last 1890's operation of engine; locomotive was not properly cleaned after last steaming. One bottom row flue has extreme corrosion and material delamination due to acid content in fire box ashes. Present fire box has never had a fusible plug in the crown sheet. Crown stay bars are attached to crown sheet with stud bolts and nuts as opposed to conventional rivet construction. Ash pan contains extensive debris from last operation of engine. Fire box door is S.P. cast iron manufacture for use on a coal burning boiler. Cotter pin missing on damper door.

Frame: Original 1862 hammer welded iron Norris frame intact; appears straight without visible breaks, patches or excessive wear. In early years painted dark green throughout; rust beginning to form on frame due to lack of proper painting since 1899. Many frame bolts are loose and require tightening. Boiler slide brackets show visible wear from use with previous boilers.

### Running Gear:

Pony truck: 4, 26 inch diameter wheels manufactured 1887 and 1888 by S.P. Sacramento Shops; fair condition with evident wear. Present pony truck was improperly adapted ca. 1880's from another locomotive; improper installation allows engine to rest 2-3 inches higher in front than in back. This uneven condition permits an uneven weight distribution on the drivers causing the equalizing levers to be uneven and function improperly. Fulcrum forging for equalizing bar is short replacement for original. Present truck is 4 wheel pivot plate bolster type. Wheel guards: front guards similar to 1870's; addition, rear guards similar to original manufacture; require straightening. Pony truck frame is badly rusted due to lack of proper painting since 1899.

Cylinder covers and casings: Originals were brass; replaced 1873 with iron covers and casings. Present cylinder covers are ca. 1880's iron replacements. Original tallow cups variously replaced with other styles; removed altogether 1880's, replaced with present hydrostatic lubricator system. Present left side replacement steam chest cover has been broken and patched with rivets and plates. New cylinders 1873.

Builder's plates: 1 plate stolen mid 1960's; remaining plate is difficult to authenticate. Two accurate brass reproductions manufactured and installed.

Valves: Stephenson link valve motion; valve rods, rockers and links are original. No. 1 stamped on back sides of rockers. Eccentric straps are S.P. replacements; straps are S.P. castings based on a combination pattern fitting three manufacturers' locomotives; Mason, McKay & Aidus, and Rhode Island Locomotive Works. Eccentrics read "Mason, Mc & R and RI 173." Valve rods are iron, slightly rusted; require cleaning, burnishing and light oiling.

### Running Gear (Continued)

The three leaf valve gear equalizing spring is missing half a leaf.

Drivers: 4, cast iron mid 1880's replacements. Present 51 inch diameter drivers have two full length cast in counter balance weights; original 51 inch diameter drivers had three cast-in partial length counter balances. Present flanged tires are 3 replacement Midvale steel and 1 Alfred Krupe steel tire patented June 8, 1852, on right rear driver; original 3 inch tires last turned 1895, 1 inch wear. Wheel guards are apparently original, slightly bent, with brass acorn turnings. Springs are marked "Geo. H. Smith" replacements, No. 799. Back of drivers painted with S.P. Order No. 399.

Rods: Main rods are possibly original manufacture; present side rods are ca. 1870's straight-sided replacements. Original side rods were double tapered. Crosshead guides, crosshead and guide supports are 1873 replacements similar to originals.

Pilot: Wood stave pilot with two wrought iron braces manufactured 1890's by S.P. Present wood staves have spiral faces, i.e. hyperbolic curves, unlike typical earlier style pilots. Original pilot was spiral faced, wood staved with a single wrought iron pilot brace; repiloted ca. late 1860's with flat face wood staves. Converted 1873 to wood plank switcher footboards. Present rear frame timber is badly cracked. Pilot frame requires tightening.

Pilot beam: Original beam was wood with full radius ends; original pilot rooster was secured to the pilot with a forged ring instead of the present S.P. cast iron coupling pocket. Pilot beam replaced by 1873 with a heavier

Pilot: (Continued)

square-ended beam timber; first addition of poling pockets, full length horizontal hand rail and early style coupling pocket. Beam replaced 1880's with wider timber; tool box installed on pilot apron. Present pilot beam installed 1890's, covered with sheet iron, replacement coupling pocket and hand rail removed leaving remnant rail post stanchion. Two cast iron running light mounting brackets added ca. 1890's.

Cab: Wood, fair condition, present cab completely rebuilt since 1898 due to absence of any visible square nails; doors and windows are 1954 replacements. Several improperly made cab roof arches have allowed roof to sag badly. Original cab was three sided open back wood cab; back wall added 1873; double pane windows were replaced with single panes. Window ledge cab moldings removed by 1873. Cab originally lettered "GOV. STANFORD." on side name panels.

Grab rails: 2 original rails were mounted on the back side of cab wall; present iron replacements installed ca. 1873 on cab side walls. Good condition.

Floor: Original diamond-patterned cast iron floor is intact underneath decaying wood planked floor. Planks are C.P. addition strap-ironed together to bring cab floor up to level of various tenders used with engine during its service life.

Seats: 2, iron box replacements with canvas seat pads; original seat boxes were probably wood.

Lubricators: Cylinder lubricator added 1880's; air pump lubricator added 1873.

Gauge stand: Brass, inappropriate three gauge style installed



Cab: (Continued)

ca. 1899 for static engine display. When built, locomotive was equipped with only one gauge -- a steam gauge. Second gauge added 1873 for air brakes; second gauge position (right hand side) on present stand is for a duplex air gauge required for train line air. Third position (left hand side) is the location of the independent air gauge which is utilized with a locomotive straight air system; however, the "Governor Stanford" never had independent straight air brakes and, therefore, the gauge and stand are inappropriate on this locomotive. A gauge was attached to the stand in 1954 by ill-advised rail enthusiasts who were attempting to spruce-up the locomotive's appearance prior to public display.

Steam gauge: Present gauge is inappropriate 1954 replacement gauge originally used on modern steam locomotives having auxiliary booster engines. Original gauge replaced by 1899; second gauge vandalized and destroyed beyond repair by 1930.

Air gauge: Present gauge is appropriate type and style for twentieth century equipment.

Injectors: 2, Monitor Nos. 6 and 7 replacements for originals first installed 1880's. Two valve handles missing and left side packing gland broken since at least 1930.

Cylinder cock rod handle missing since 1920's.

Air brake stand handle missing since 1920's.

Tri cocks: One handle and valve stem packing nut missing since 1920's.

Backhead plumbing and fittings: Frequently replaced, upgraded and modified as deemed necessary for operating purposes during service-life of locomotive. Replacement oil can tray intact. Two kerosene cab lights on water and steam gauges missing since 1900. Forward-reversing

Cab: (Continued)

quadrant is apparently original manufacture; reversing bar stamped No. 1. Throttle is questionable as original.

Roof: Soldered galvanized metal and painted replacement tongue and groove redwood roof applied since 1898.

Cab apron missing since at least 1900.

Tender: Original Norris wood frame tender and tank replaced by 1874; tender frame and tank replaced again late 1890's.

Underframe: Originally iron-rodged wood frame; replaced 1873 with new metal frame. Present riveted iron frame with wood end beams applied for static display late 1890's presumably from Central Pacific Locomotive second No. 1728, built Rhode Island 1888 4-6-0; never painted underneath and rusting badly. Miscellaneous nuts missing on frame.

Water tank: Original Norris sheet iron tank replaced by 1870 with similar size tank; replaced again late 1890's for static display with patched larger style tank from Southern Pacific locomotive Second No. 1307, built Schenectady in 1878 4-4-0. Previous numbering "1307" visible on sides and end of present tank; renumbered "C.P. 1" 1899, remnants of decorative stripping and filigree visible until 1954 repainting. Flared tank railing visibly broken and patched through normal use; tank has four iron brackets to form coal bin. Tank is badly rusted inside; requires cleaning. Water tank chollar and lid intact.

Tool boxes: 2 wood tool boxes added by 1873; removed by 1899. Present tank railing has remnants from tool boxes previously mounted while on S.P. No. 1307.

Foot boards: Side and rear wood foot boards added 1873 with hand rails upon conversion to fire engine with

Tender: (Continued)

second tender frame.

Check chains: Double link; converted to triple link by 1899.

Rear tender hooks: 1 light duty left on rear railing from use as S.P. No. 1307; had 4 forged iron hooks for cables, chains, and pulling hooks on rear original Norris tender.

Foot plates: 2 wood steps with strap iron supports furnished with 1890's tender frame.

Hand rails: 2 hand grabs originally; second tank had 2 re-located hand grabs, 2 full length side and 1 end beam railing. Third tender assembly applied late 1890's has 2 front grab irons and 1890's style end ladder.

Rear coupler pocket: Originally single pocketed cast draw-head; present S.P. iron casting is double pocket with pin.

Trucks: Originally 2 four wheel strap iron frames with wood bolsters, wood brake beams and 30 inch diameter cast iron wheels. Present trucks contain numerous S.P. cast replacement parts; only the iron bars of the frame are potential original parts. Springs are replacements, rusty on front truck; trucks are similar to early style Schenectady design. Rear truck bolster springs were apparently removed late 1890's and were possibly used for truck springs display. Present tender frame does not properly seat on trucks; trucks, tank and frame appear to have been assembled for static display services rather than for service.

Wheels: Present wheels are October-November 1894 S.P. Sacramento cast iron 30 inch diameter; stamped January 30, 1895, when wheels were pressed on present December 26, 1894 McO stamped axles.

Coal bin contains 9 ties and 2 links from static display of locomotive at Stanford University 1916-1963.

Sides lettered "C.P.R.R." 1954; rear No. "1".

Tender: (Continued)

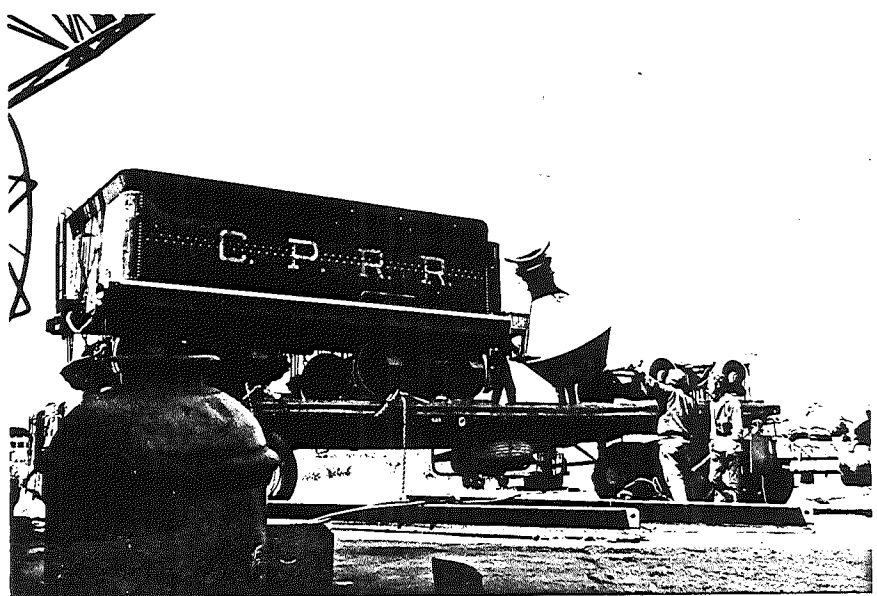
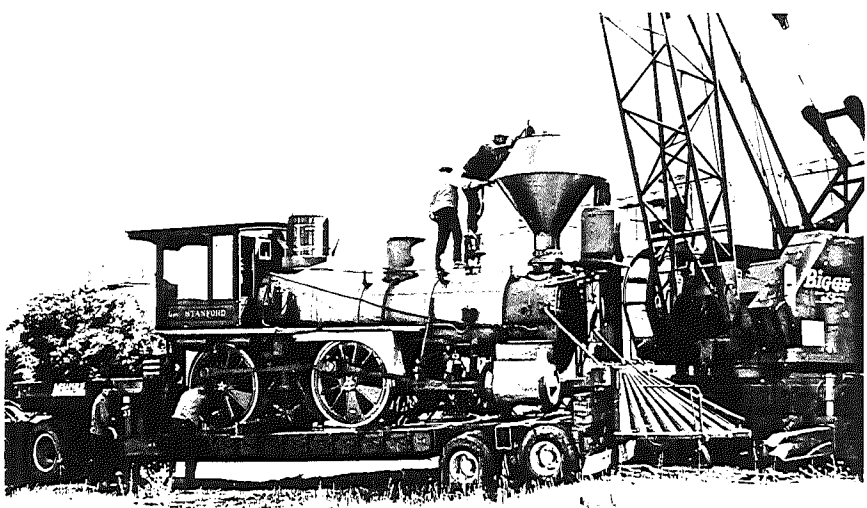
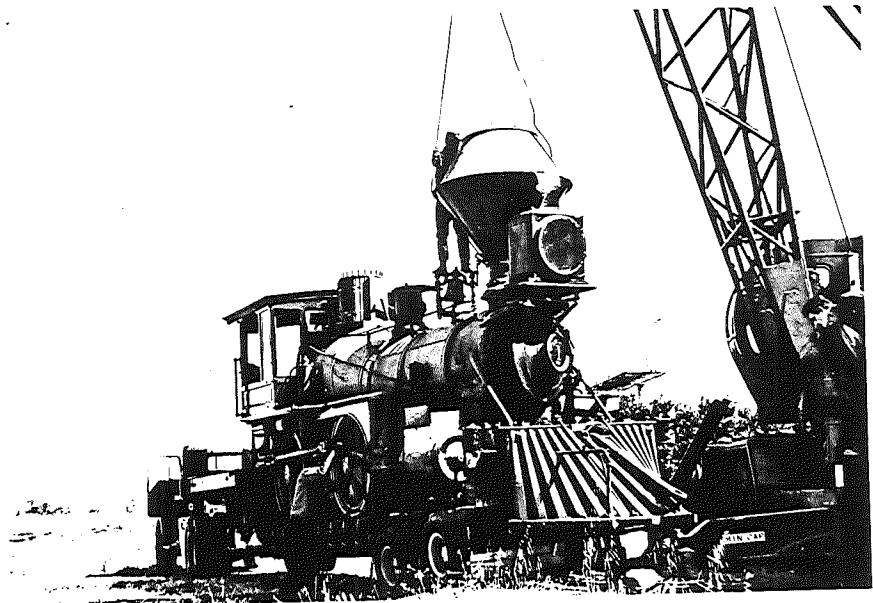
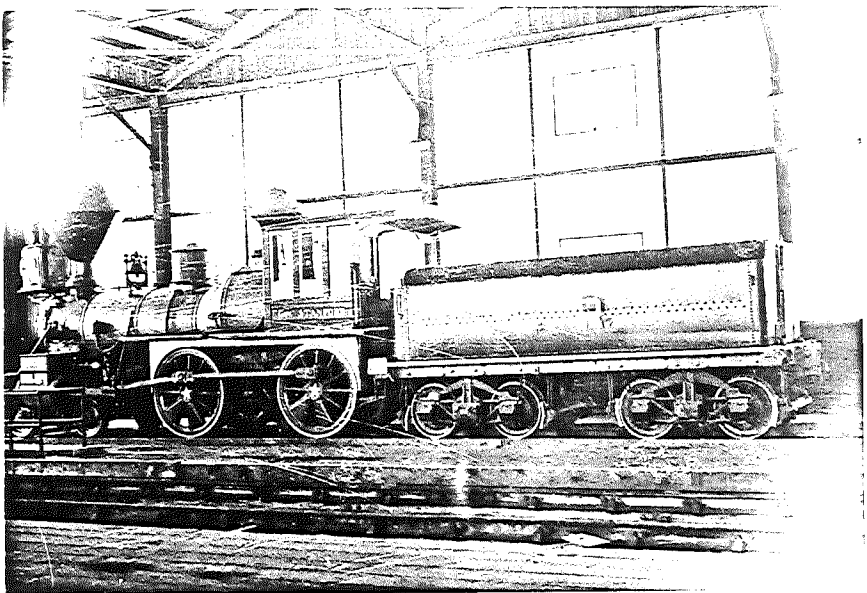
Tri-cock tender valve handle broken 1970's.

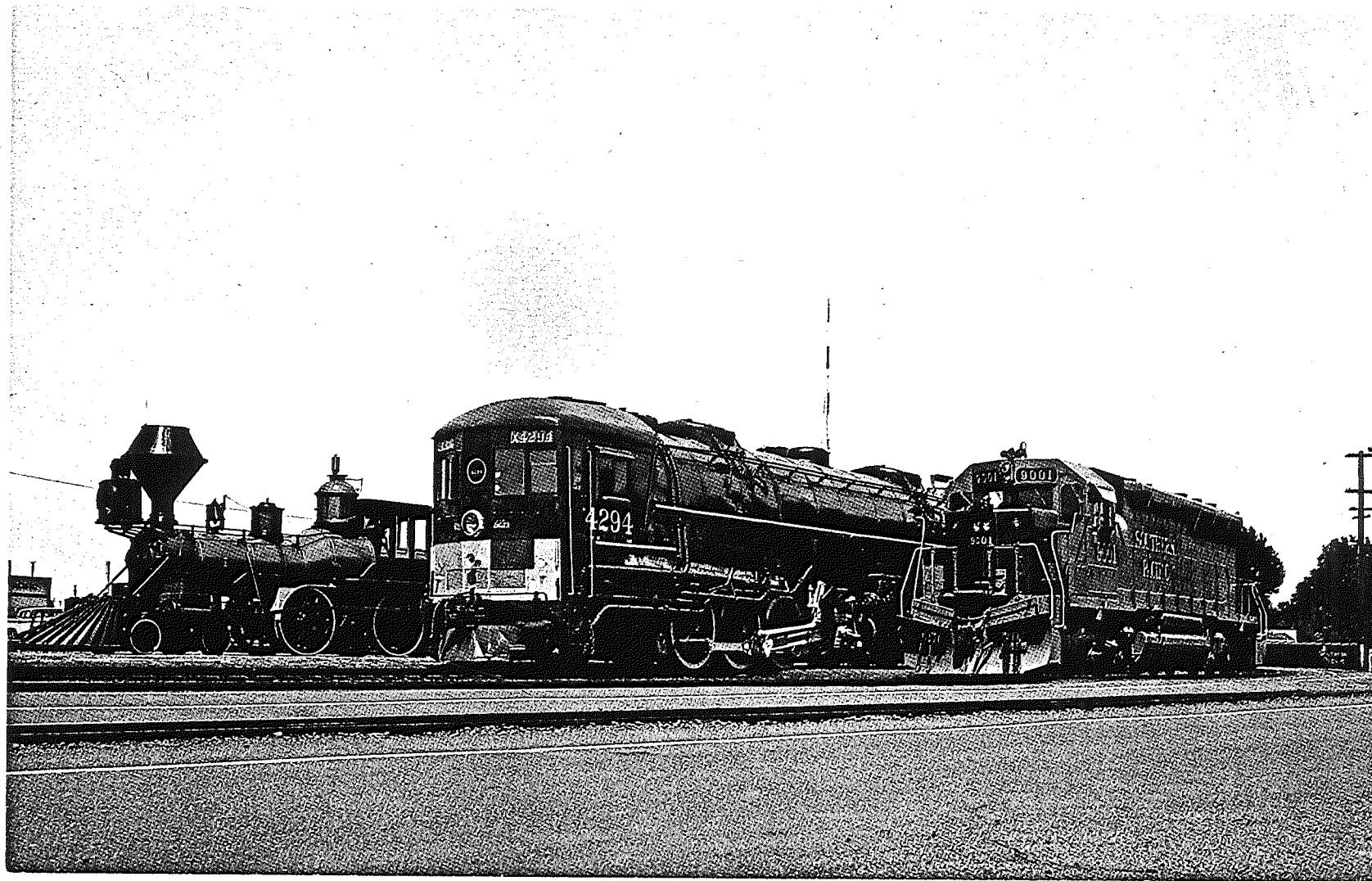
Air Brake Equipment: Originally built with only manually operated tender brakes on all four axles; Roger style brakes applied 1873 to tender and driver brakes. Present Westinghouse Air Brake 6 inch pump installed late 1880's or early 1890's; air hoses are United Rubber Company, Trenton, New Jersey manufacture for S.P., installed March 1899: marked as guaranteed for 30 months. Tender brake beams are steel replacements marked in reverse "A. & R. I. & S. Co. Troy 1875 Steel." Train line air installed ca. mid 1880's; lines marked as applied for S.P. Shop Order No. 339. Tender brake cylinder is antique Westinghouse patented April 13, 1869; marked "C.P. 1728" on right side, cast "For tender use only." Engine air tank is patched; cab & air brake stand is Westinghouse serial No. 1330, stamped No. 27. Signal line brackets intact on tender; line missing.

Fire Equipment: Boiler-mounted steam water pump, tear tender hose reel, delivery lines and connections installed 1873; removed after 1879.

Color Scheme: Present scheme devised and one coat brush applied 1954 by rail enthusiasts when locomotive was spruced up for re-opening of Stanford Art Museum following 45 years of vandalism and neglect; present style lettering, numbering and color scheme, while attractive, was never used on this engine while in service at any time. Engine was painted black with white or gold leaf lettering from late 1880's until mid 1950's.

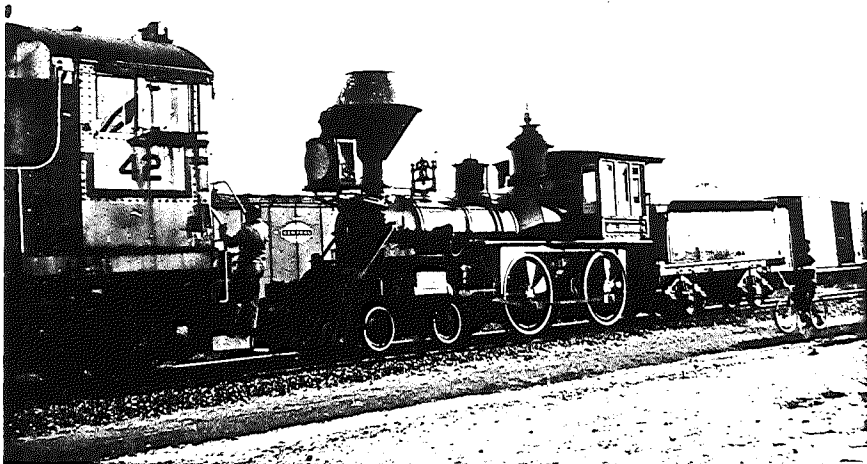
Oakland, May 1969



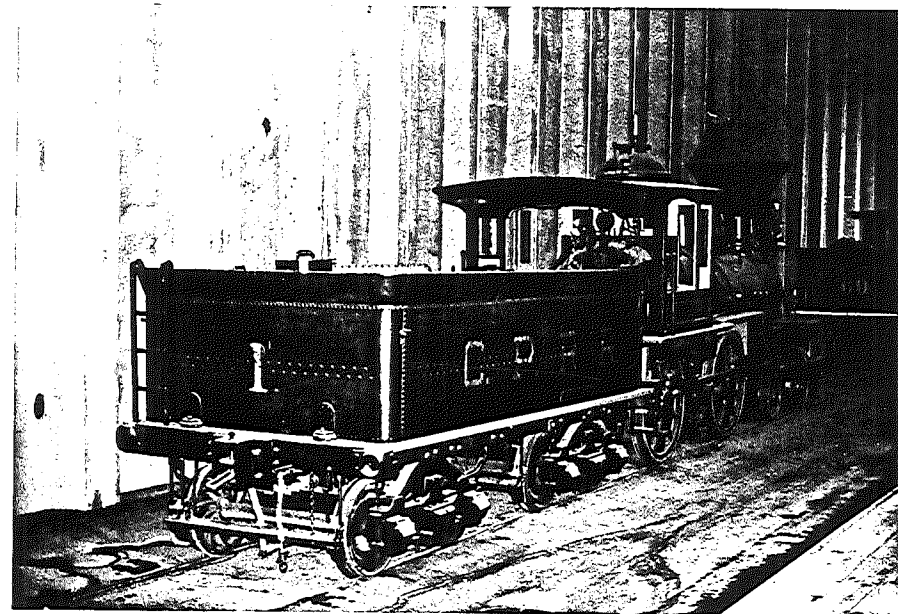


- Sacramento, May 1969

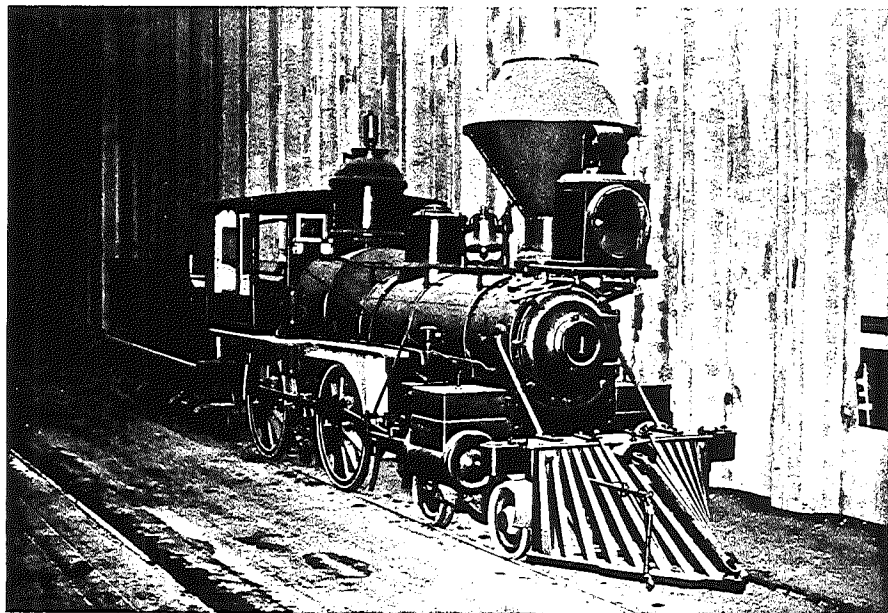




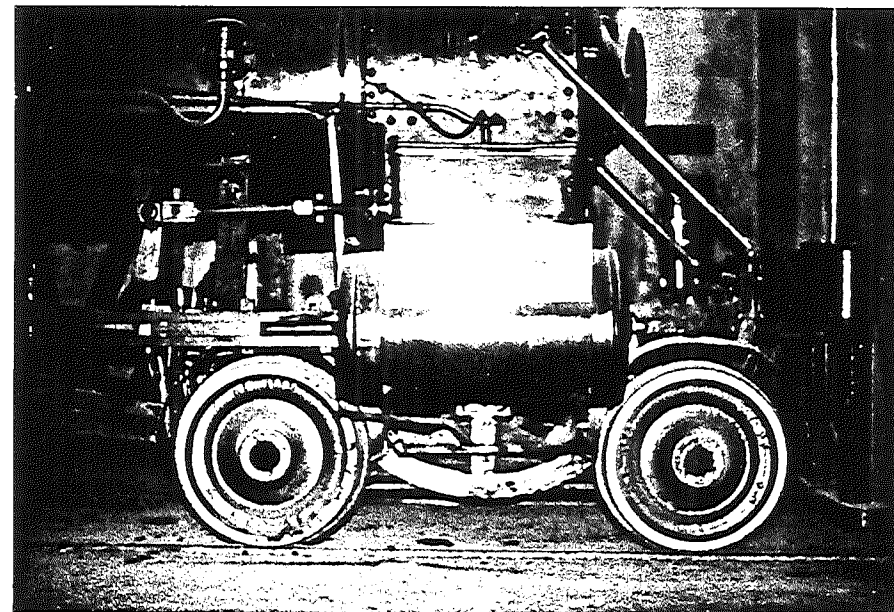
Sacramento, March 1976



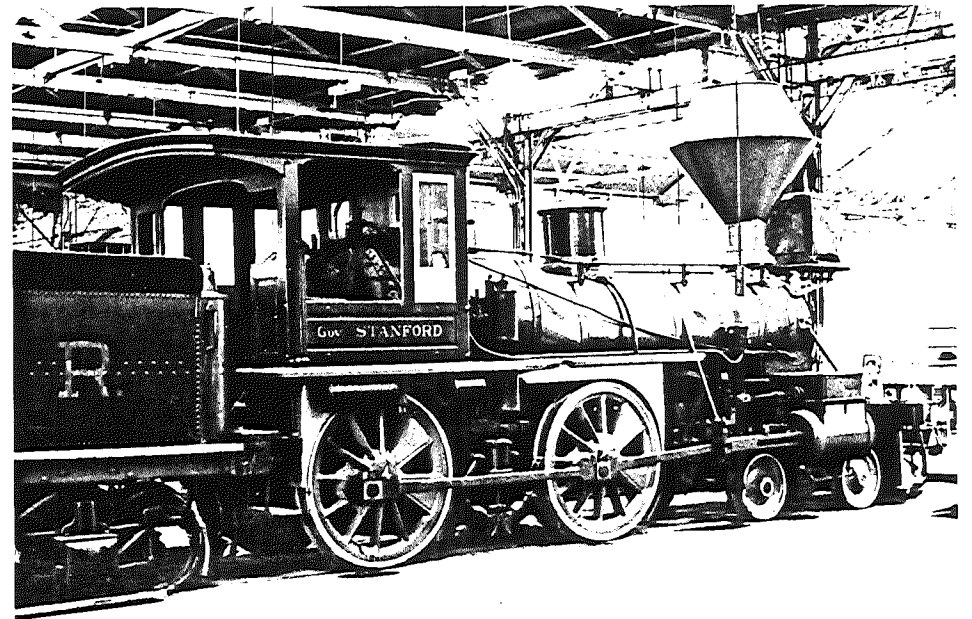
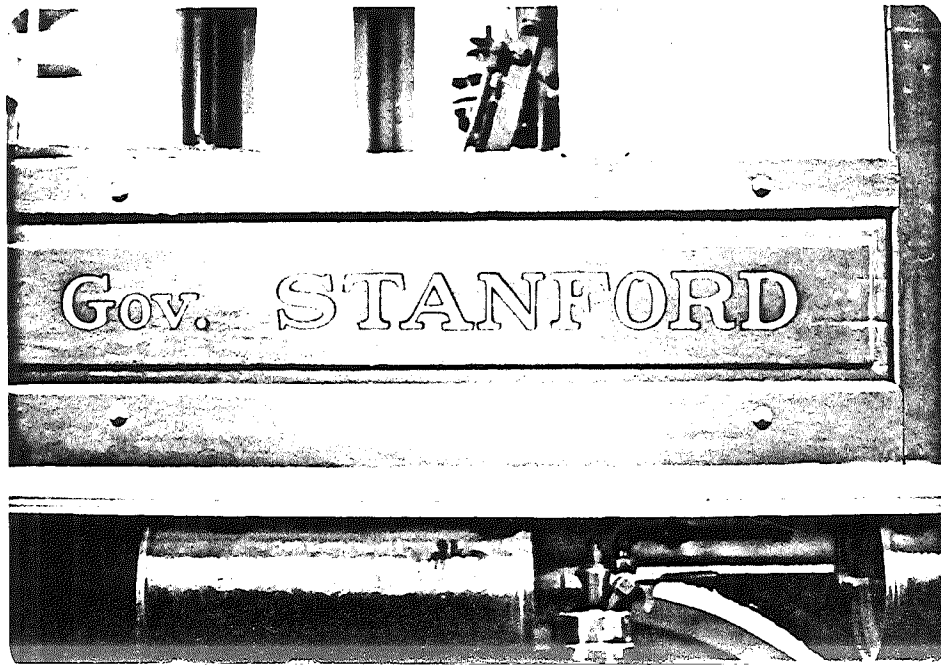
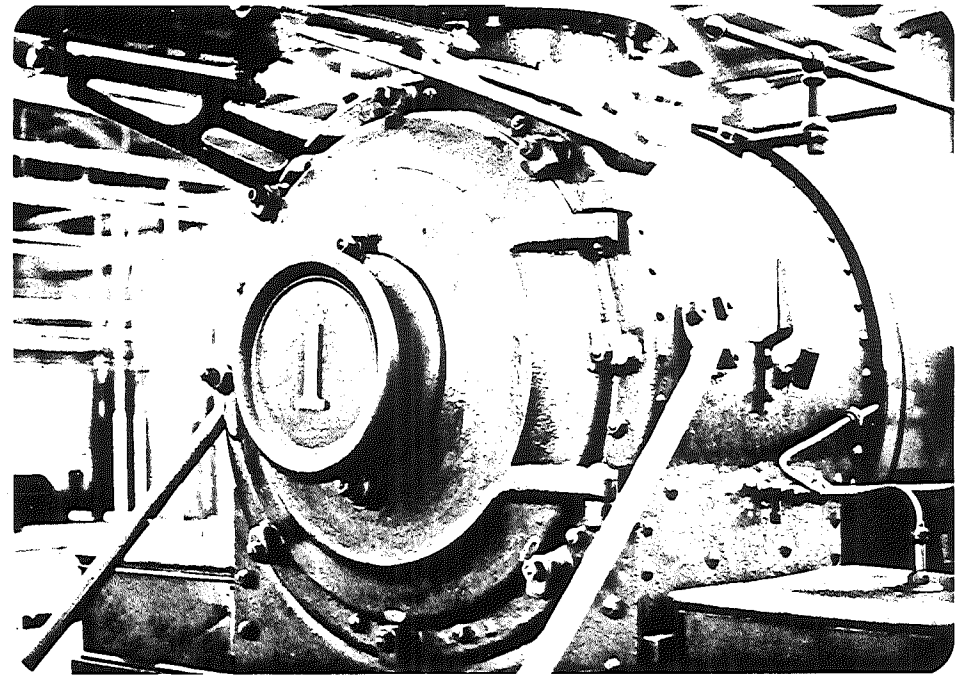
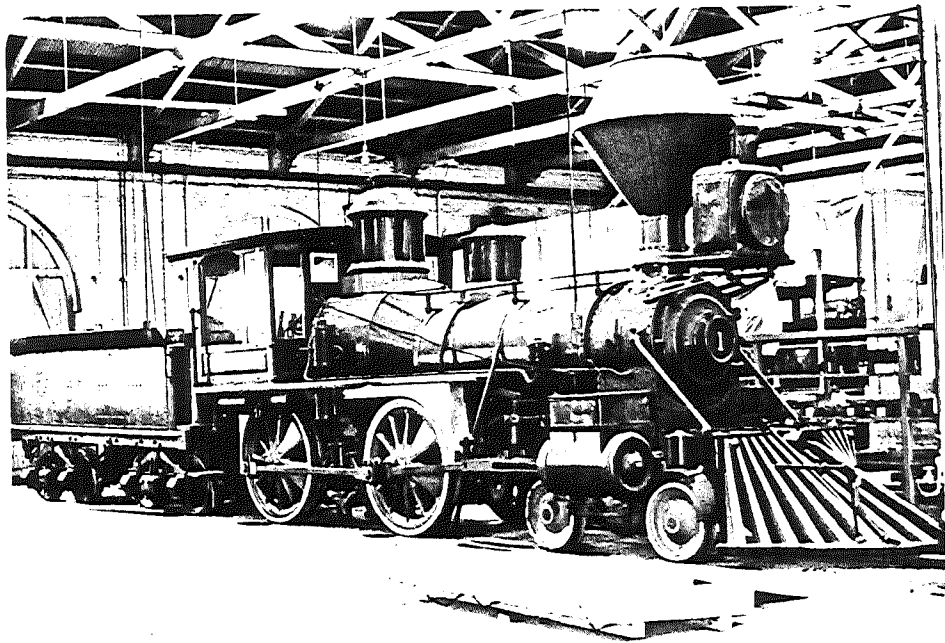
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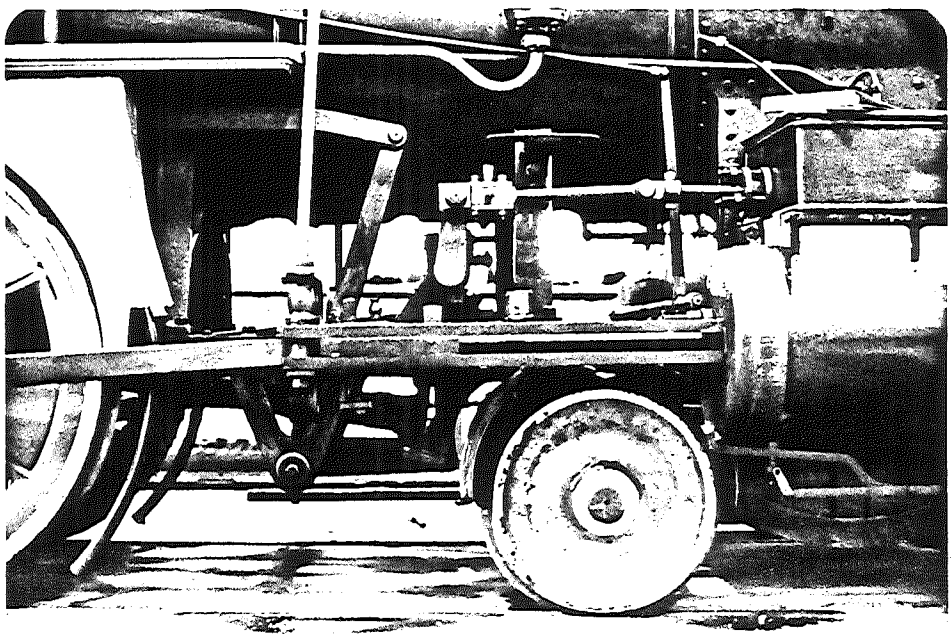
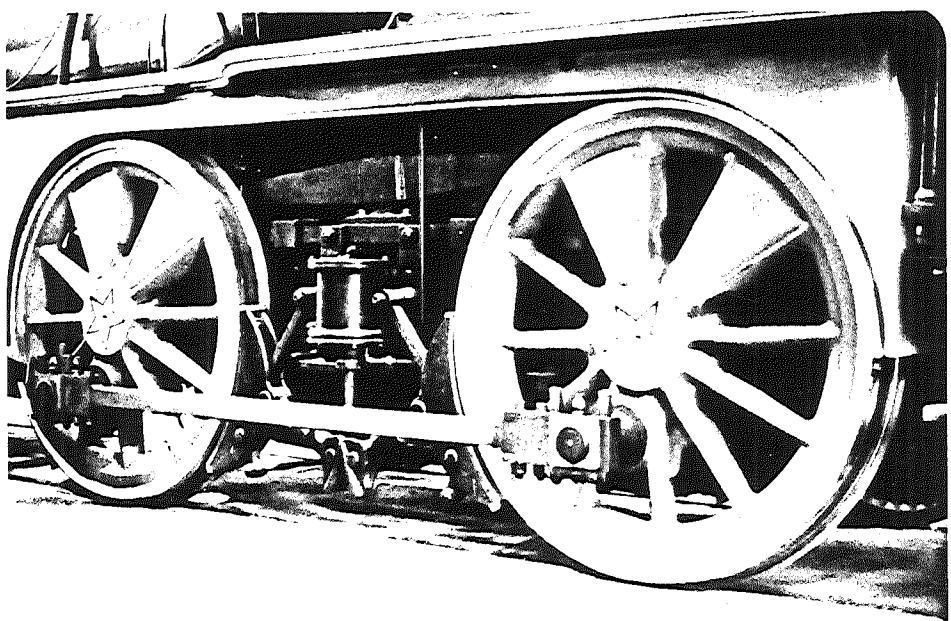
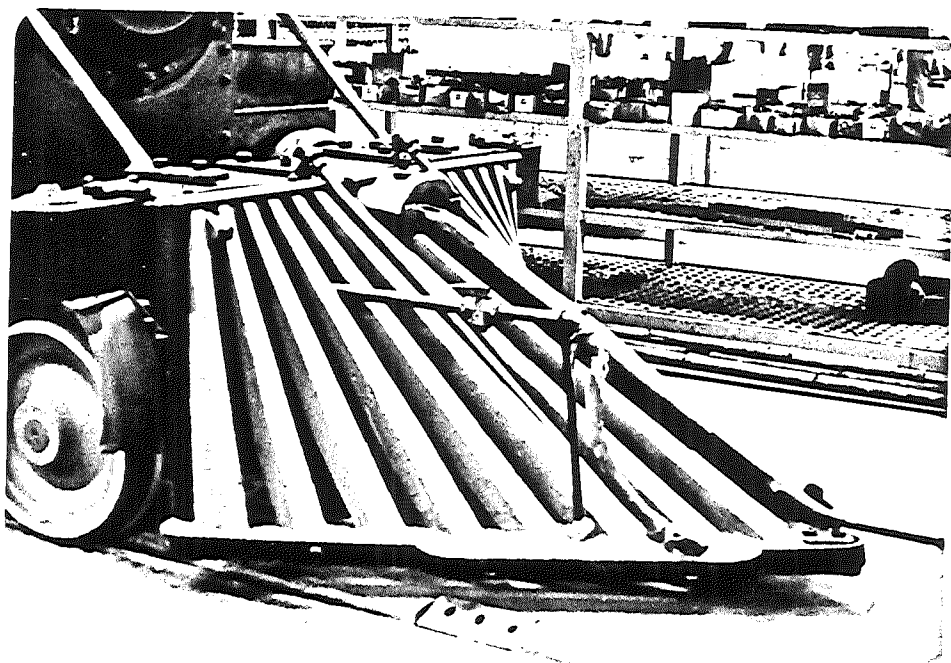
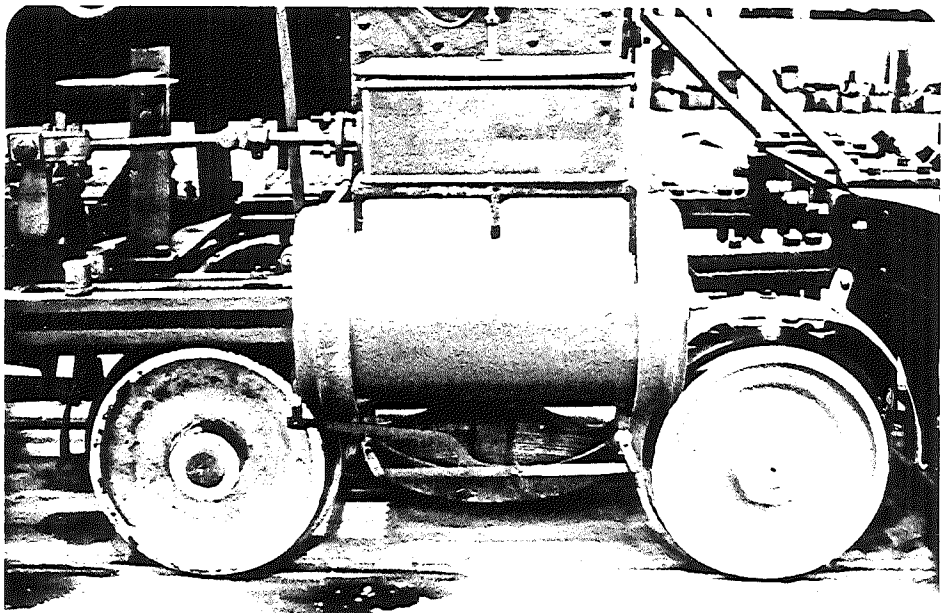


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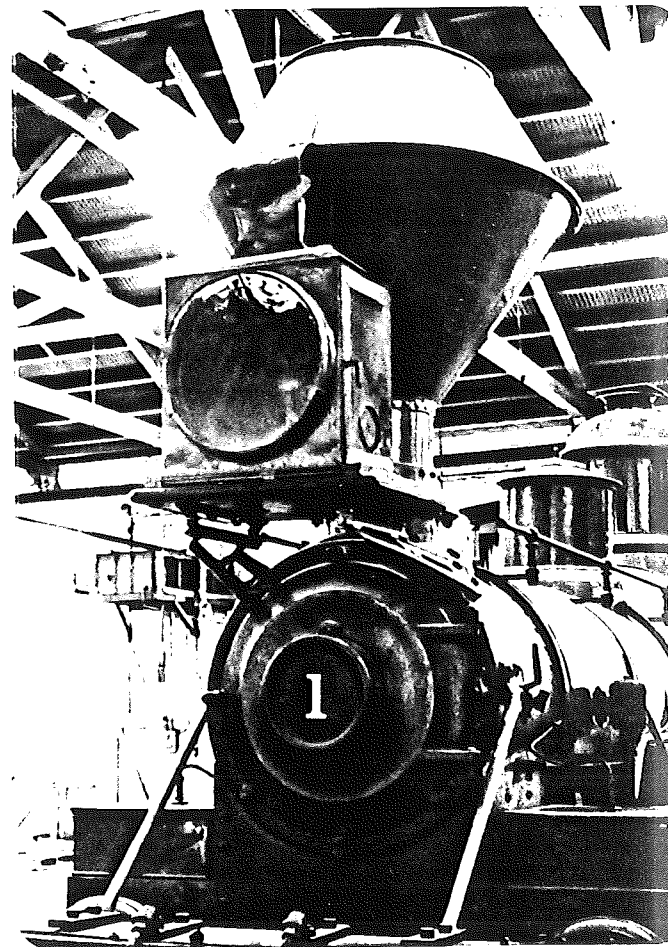
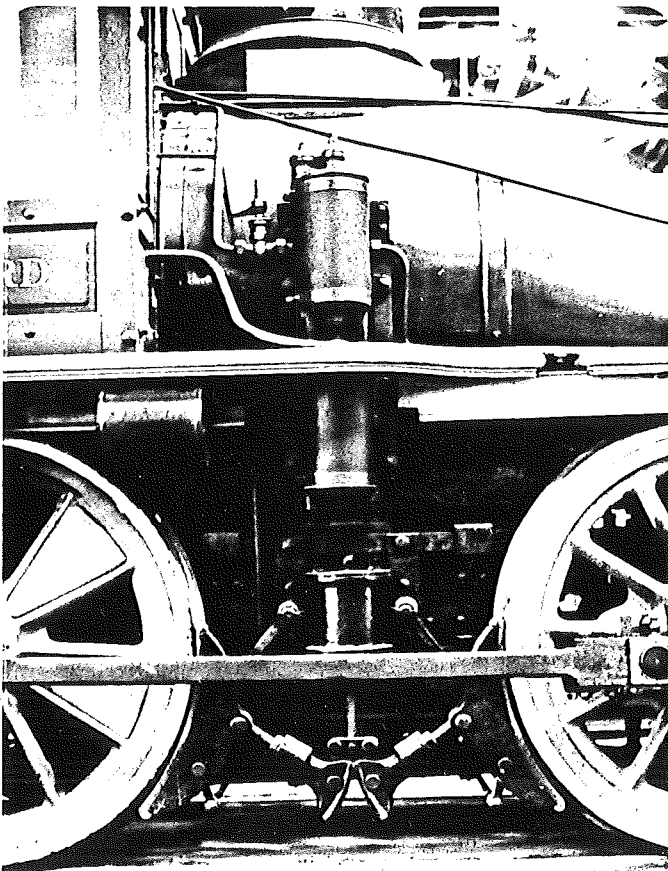
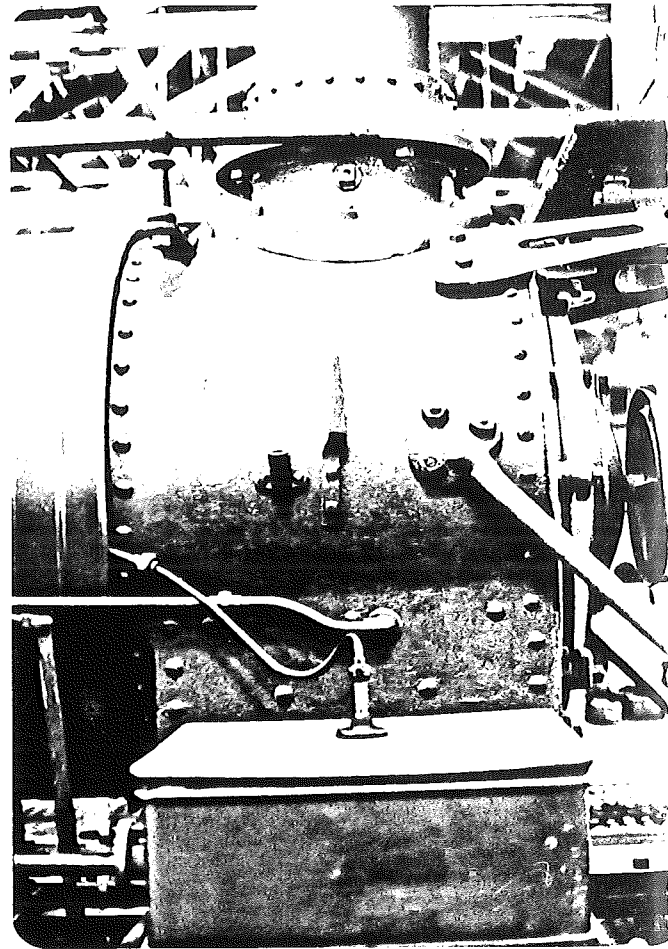
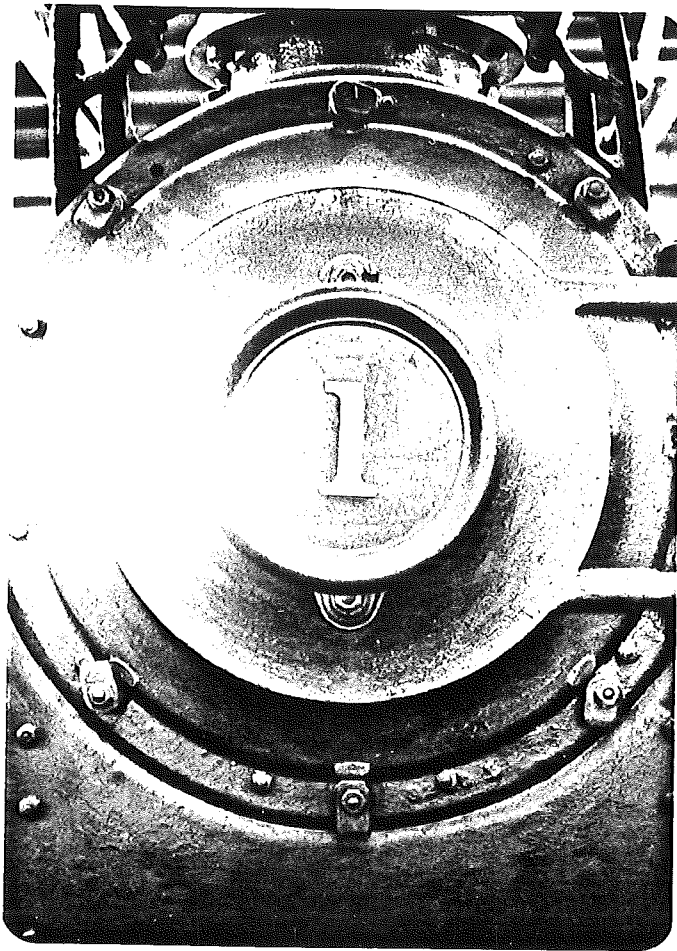


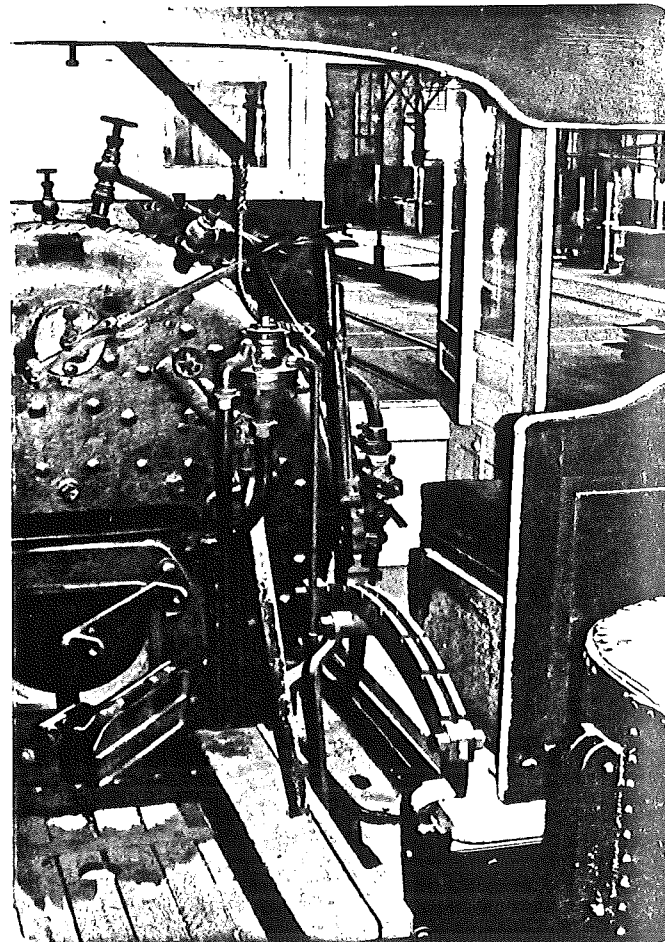
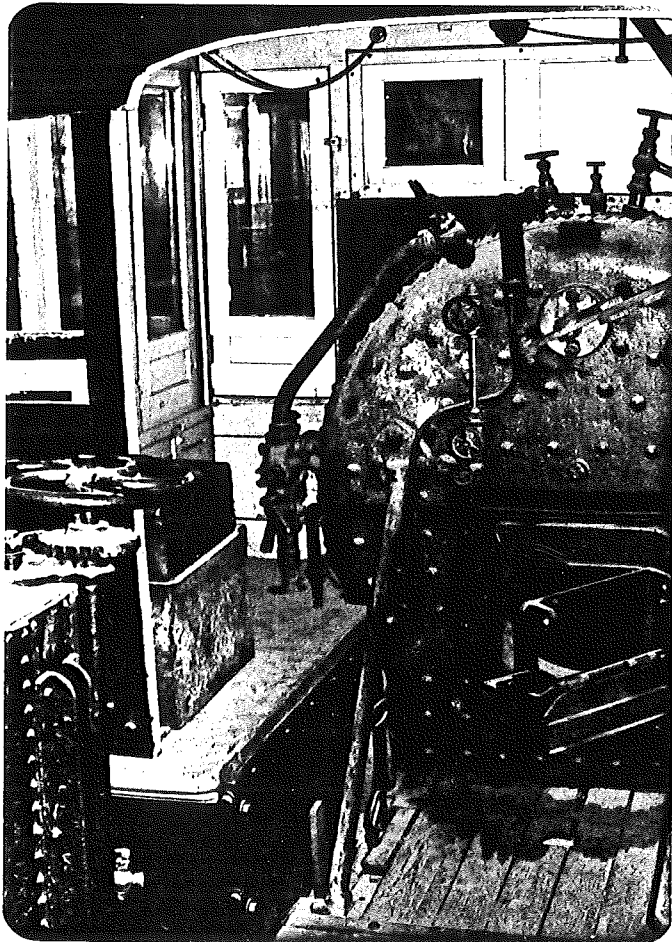
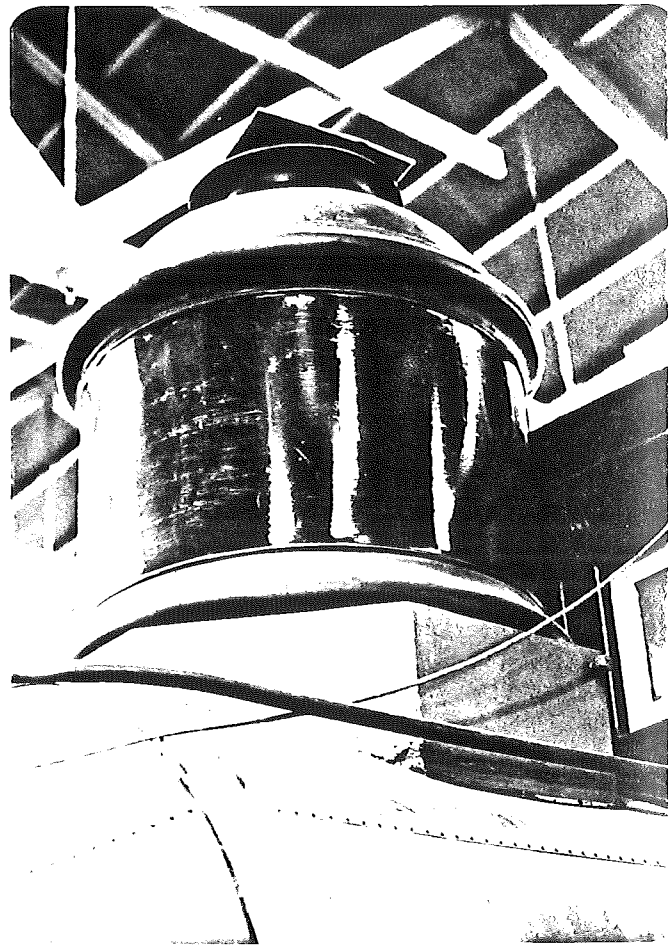
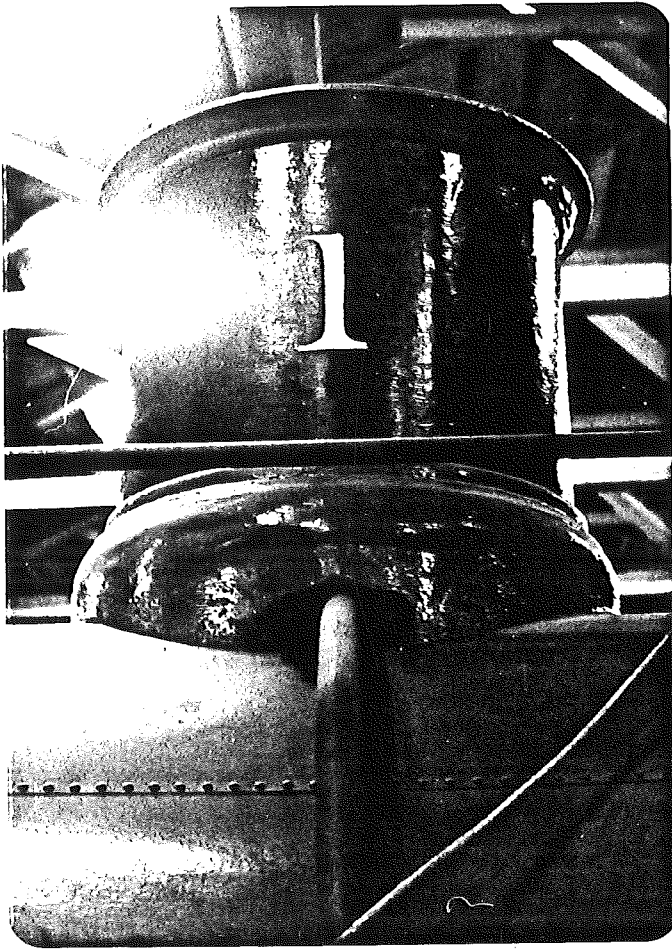
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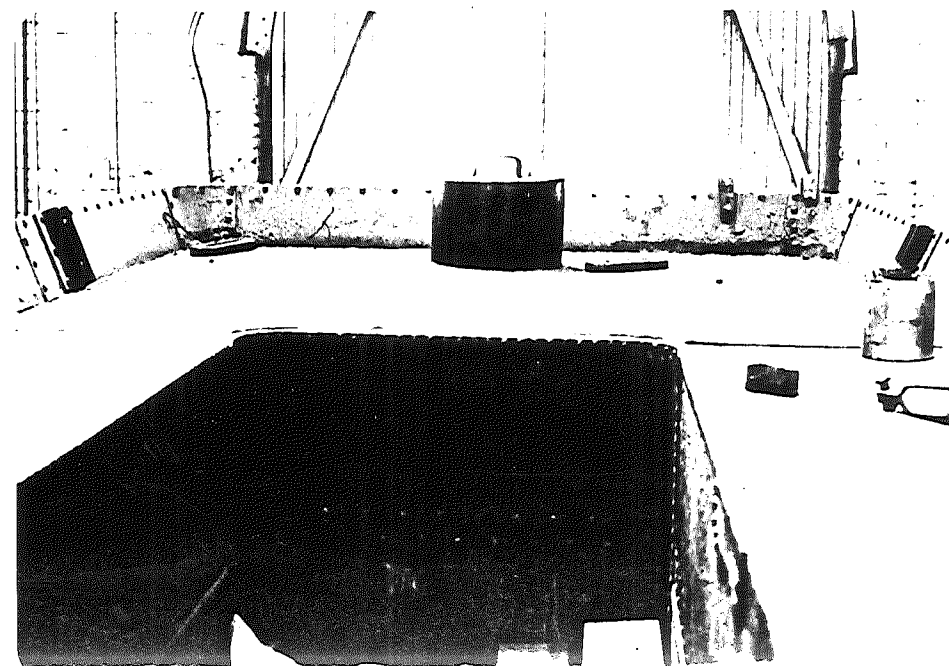
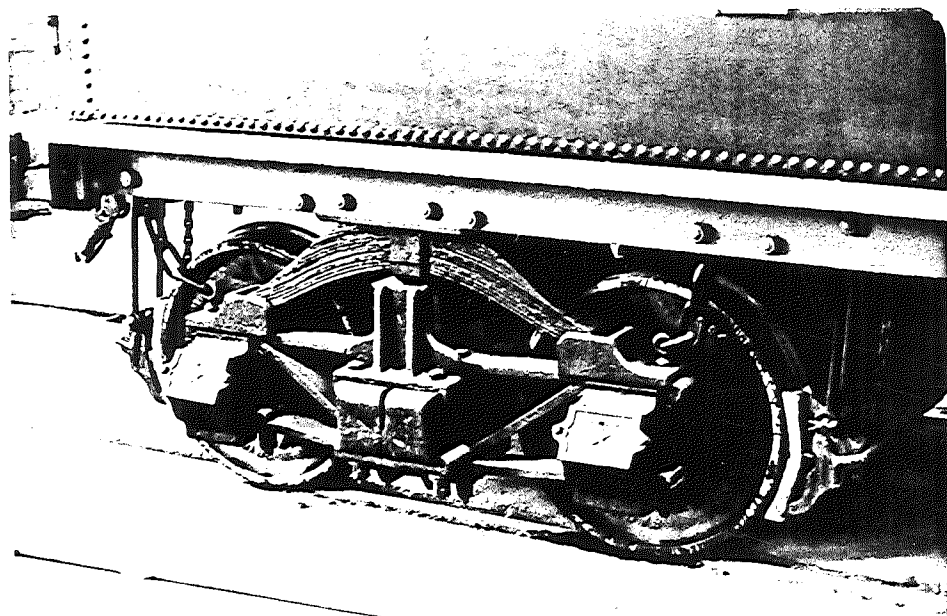
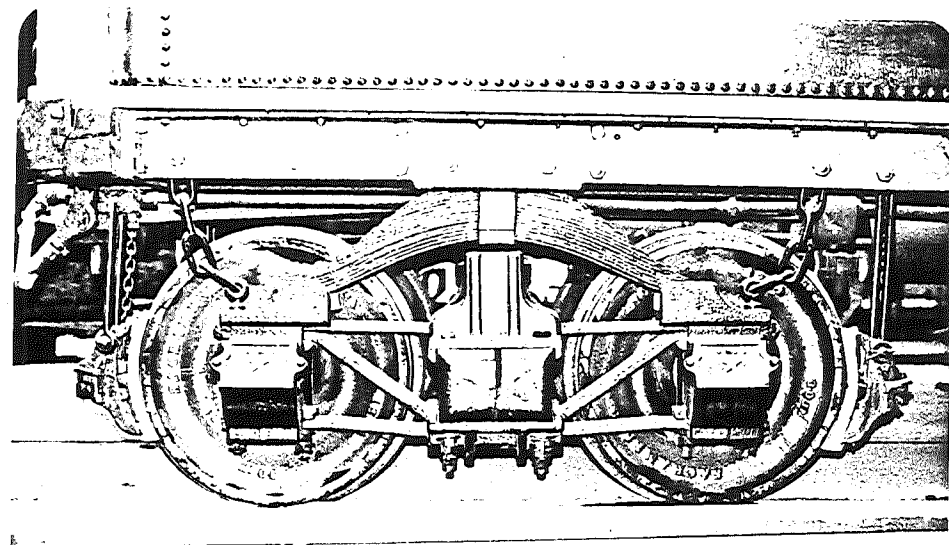
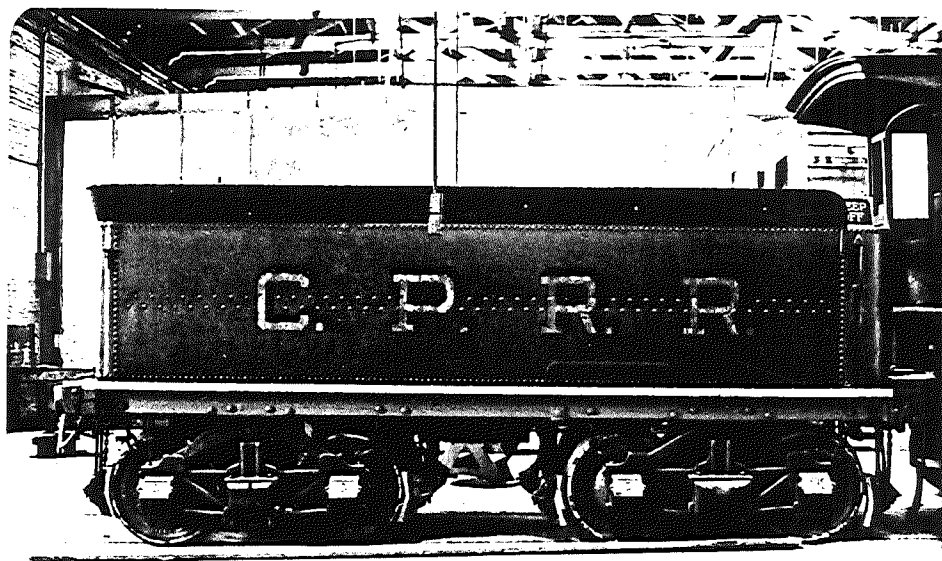












Central Pacific Railroad Company  
Record of Locomotives, 1870-1874  
Sacramento General Shops  
C.P. Locomotive No. 1 "Governor Stanford"

Accident Repairs

June 22-30, 1870

Run off track in yard, broke one main driving box  
Natural wreck  
New back tender draw head  
Lateral and lost motion taken up in driving boxes  
Finished June 30, 1870.

General Overhaul

July 1 - September 24, 1873

2 new steam chests, covers and valves, yokes pierced and turned  
Copper joints let into cylinder face, 3 new studs  
Cylinders bored  
New pistons shap ring and rods  
1 new gland  
1 cylinder head  
4 new casings  
1 set new guides  
2 new bushes in tumbler shaft hangers  
2 new rocker pins  
2 valve stem pins and bushes  
Pump plunger turned and glands bushed  
8 binder bolts  
New driving brasses and babbit shims  
Tires turned: 2 - 9/16 inches before, 2 - 6/16 inches after  
Journals turned, 4 new crank pins  
New hand rail  
New switch hook  
New fire pump complete



New bell ringer and bell stand  
New set rod brasses  
2 new keys and 8 oil cups  
4 new link bolts, new blocks and pins  
New brass whistle connection  
New pop valve  
New relief valve on throttle  
New blow off cock  
6 new stays in dome  
1 new patch on boiler  
2 new end sheets in cab  
2 new push castings  
8 brass plugs in boiler

Engine truck:

1 new box and 3 new liners on side of boxes  
New ends on equalizers

Tender:

New frame complete  
New Roger brakes  
New hand rail and platform on sides of tank  
1 new oil box  
2 new steps  
2 new copper strainers  
1 new valve complete  
Hose pipes and couplings complete

Engine and tender painted and varnished

Turned out September 24, 1873.

List of missing components of the locomotive "Gov. Stanford." C.P. #1  
as inspected in S.P. Car Shop #3, Sacramento, CA, Jan. 1977.

Engine, right side

- Builder's plate (in storage/W.Sac.)
- \*\* Oil cup - rocker box
- \*\* Oil cup - valve stem rod
- \* Check valve shroud
- Bell, yoke & stand (in storage/W. Sac.)
- Whistle (in storage/W.Sac.)
- Pump air screen
- Oil funnel - lead truck, rear axle

Engine, left side

- Builder's plate (in storage/W.Sac.)
- \*\* Oil cup - rocker box
- \*\* Oil cup - valve stem rod
- Set screw - valve stem rod wedge
- Oil funnel - lead truck, rear axle
- Nut - valve stem connecting rod

Cab interior

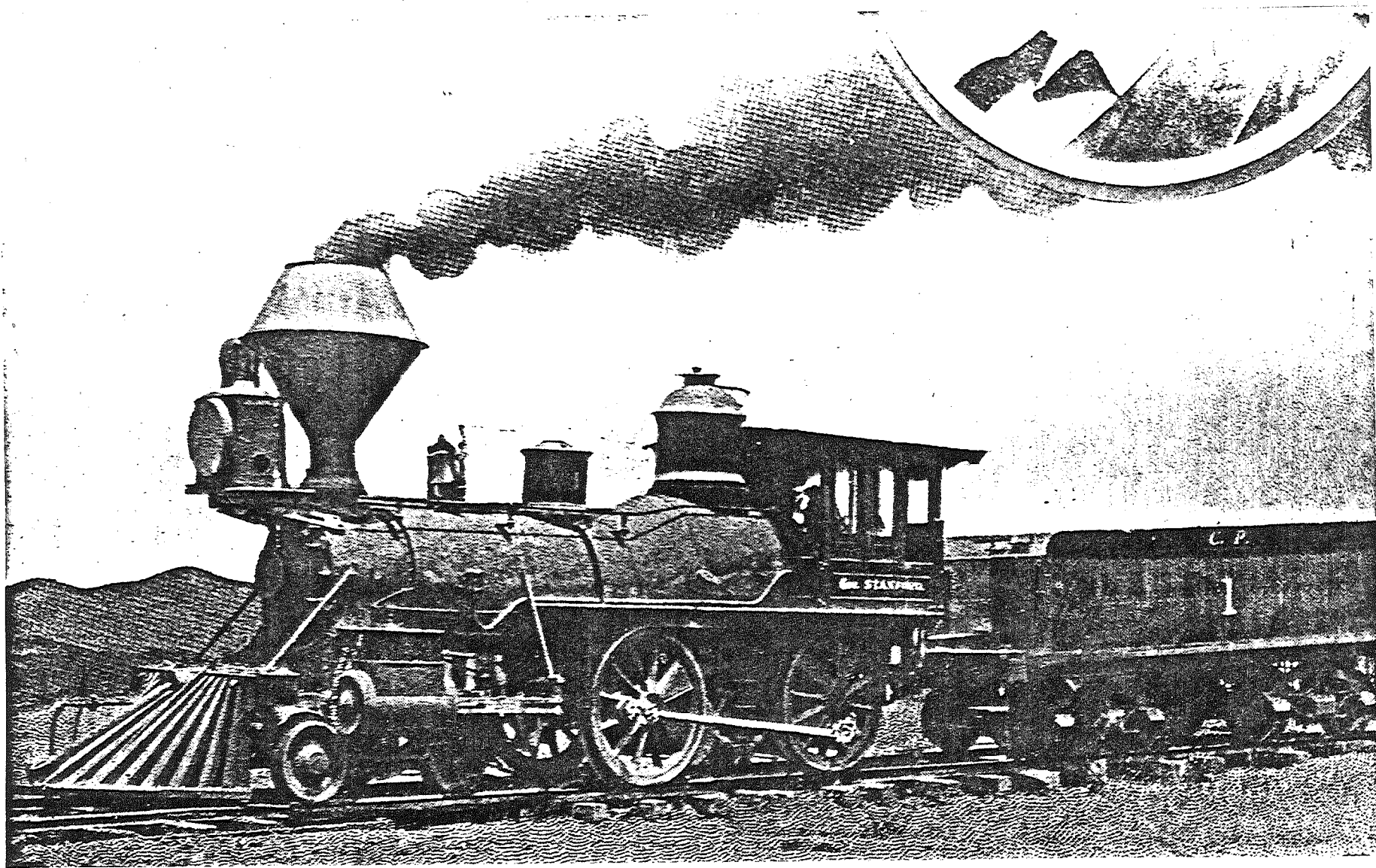
- \* Handles (2) / R.H. injector
- \* " " L.H. "
- Packing gland broken / L.H. injector
- \* Handle - cylinder cock rod
- \* Handle - air brake stand
- \* Handle - tri-cock
- \* Packing nut - tri-cock
- Engine lubricator (in storage / W. Sac.)
- Air pump lubricator " "
- Steam gauge " "
- Steam gauge stand " "
- Duplex air gauge " "
- Grate shaker handle " "

Tender

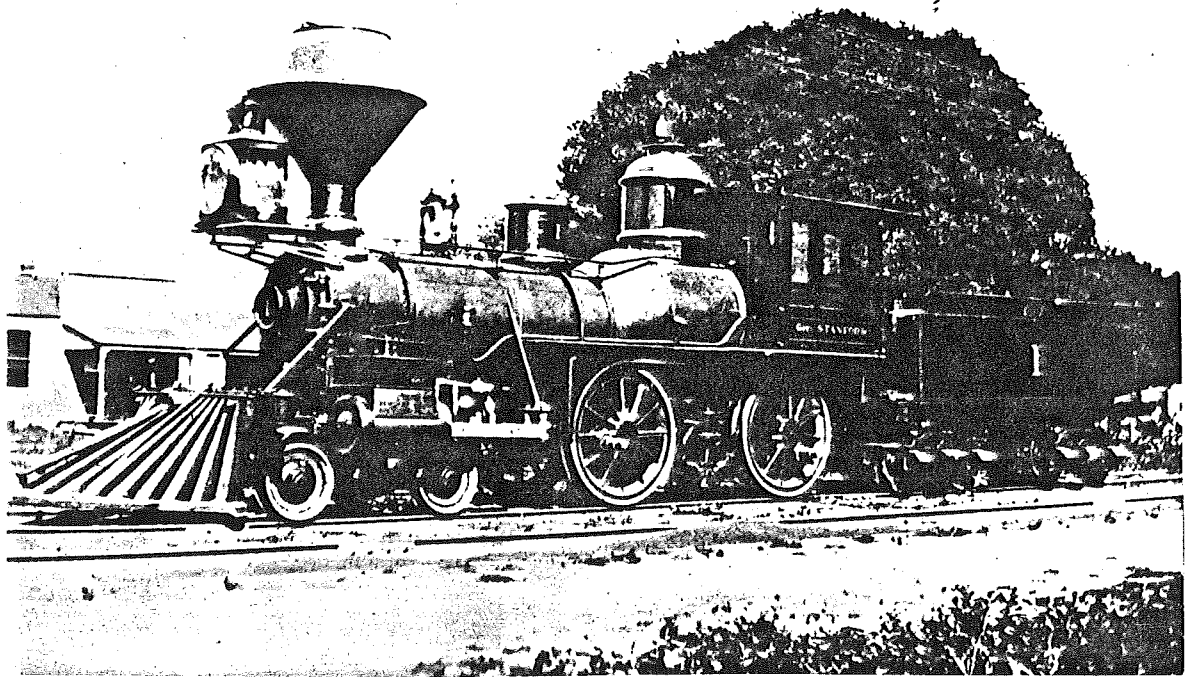
- \* Hose (2) - injector supply lines  
Tri-cock handle broken off (in storage/ W. Sac.)  
Bolster spring (2) - rear truck  
Bolster spring pads - rear truck
  
- \* Early photos taken 1930-1954 inside Stanford Museum show part missing.
  
- \*\* Engine photos of 1916 delivery to Stanford show part missing.



Sacramento, May 1969



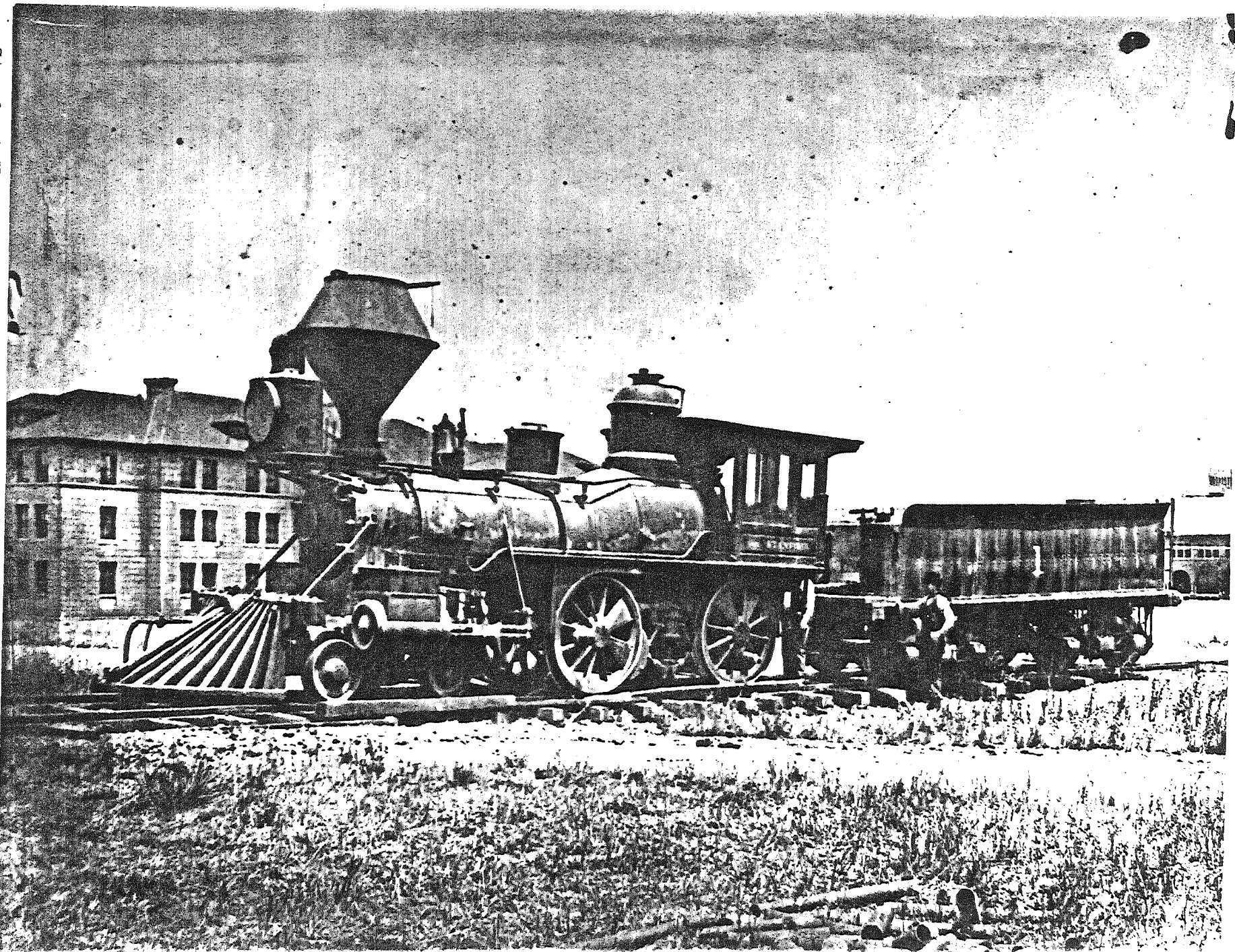
Stanford University, 1916



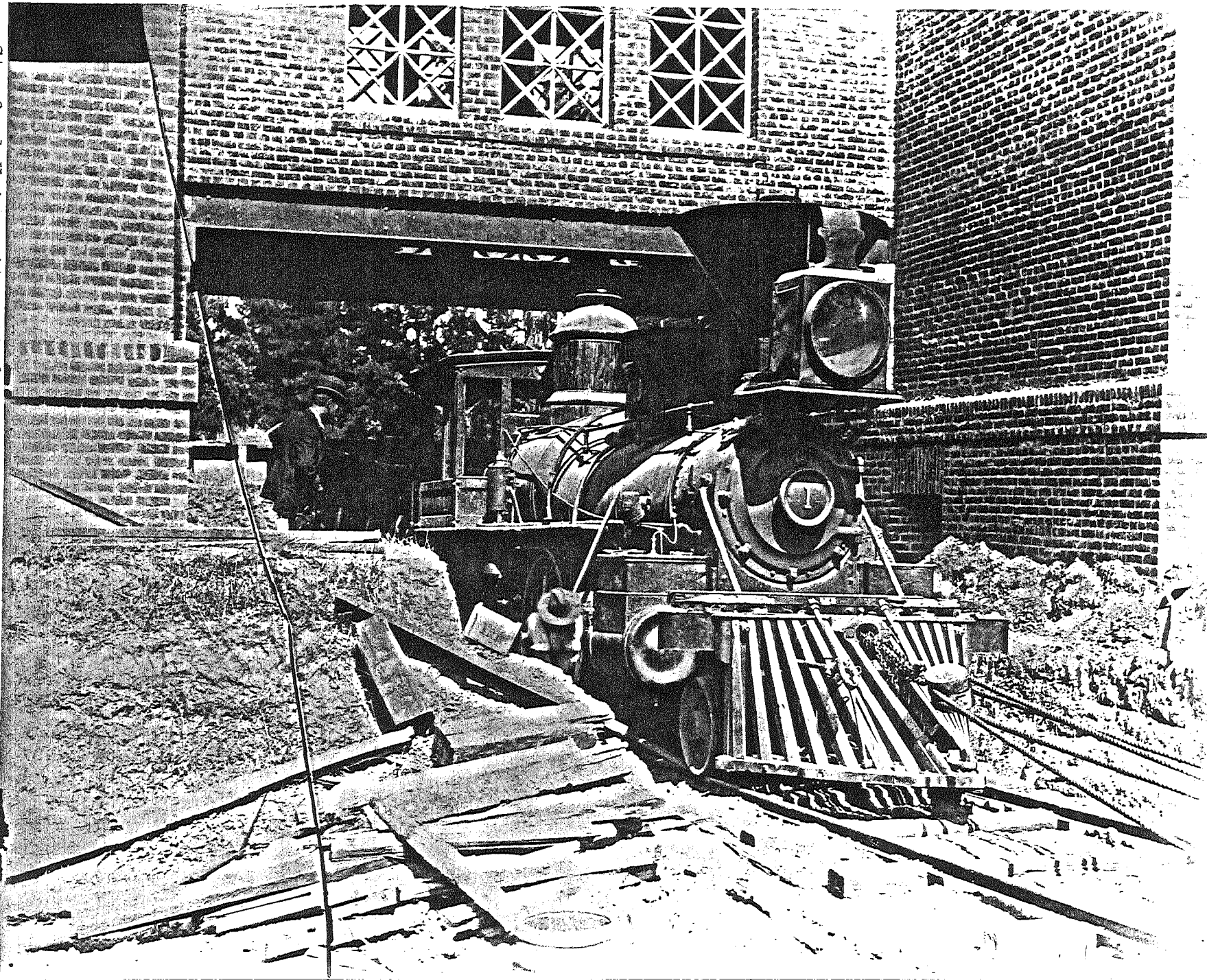
Sacramento, 1891



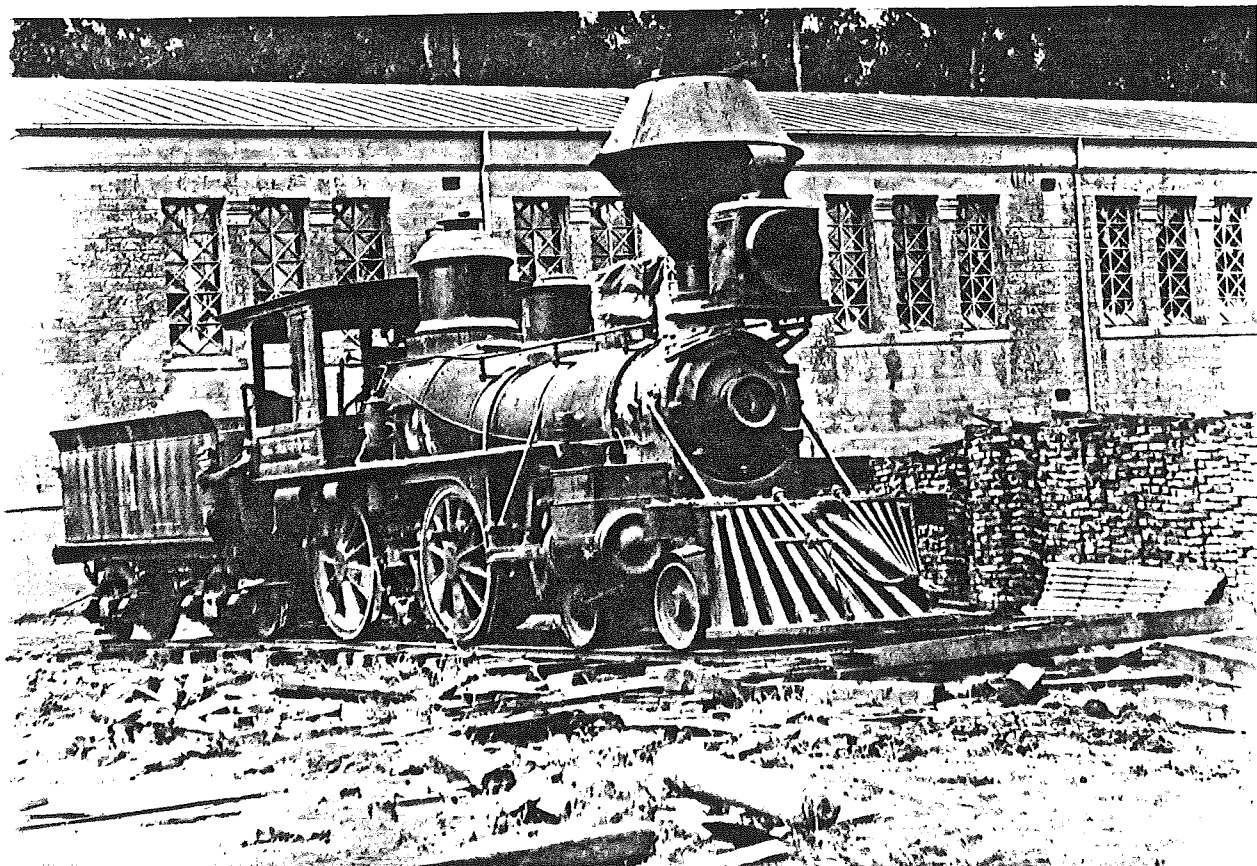
Stanford University, 1916



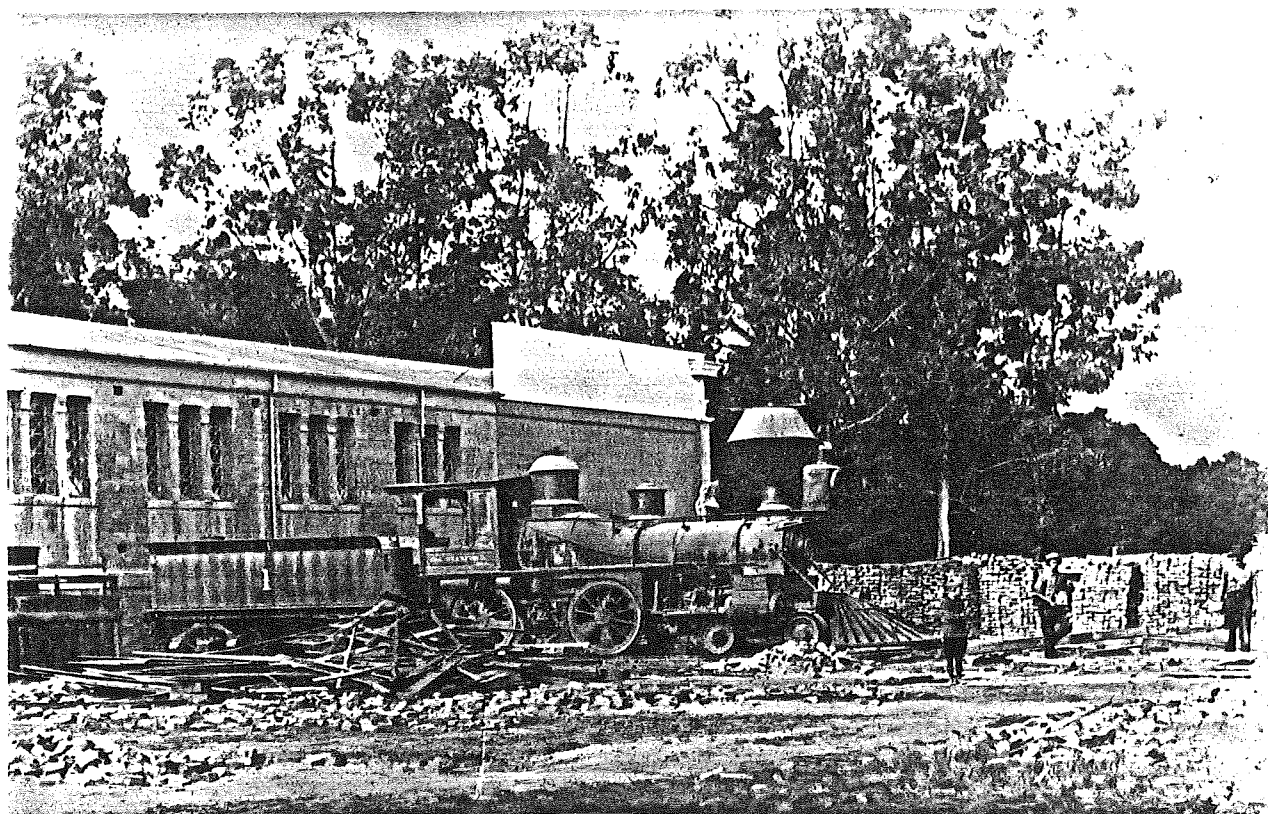
Stanford University, 1916



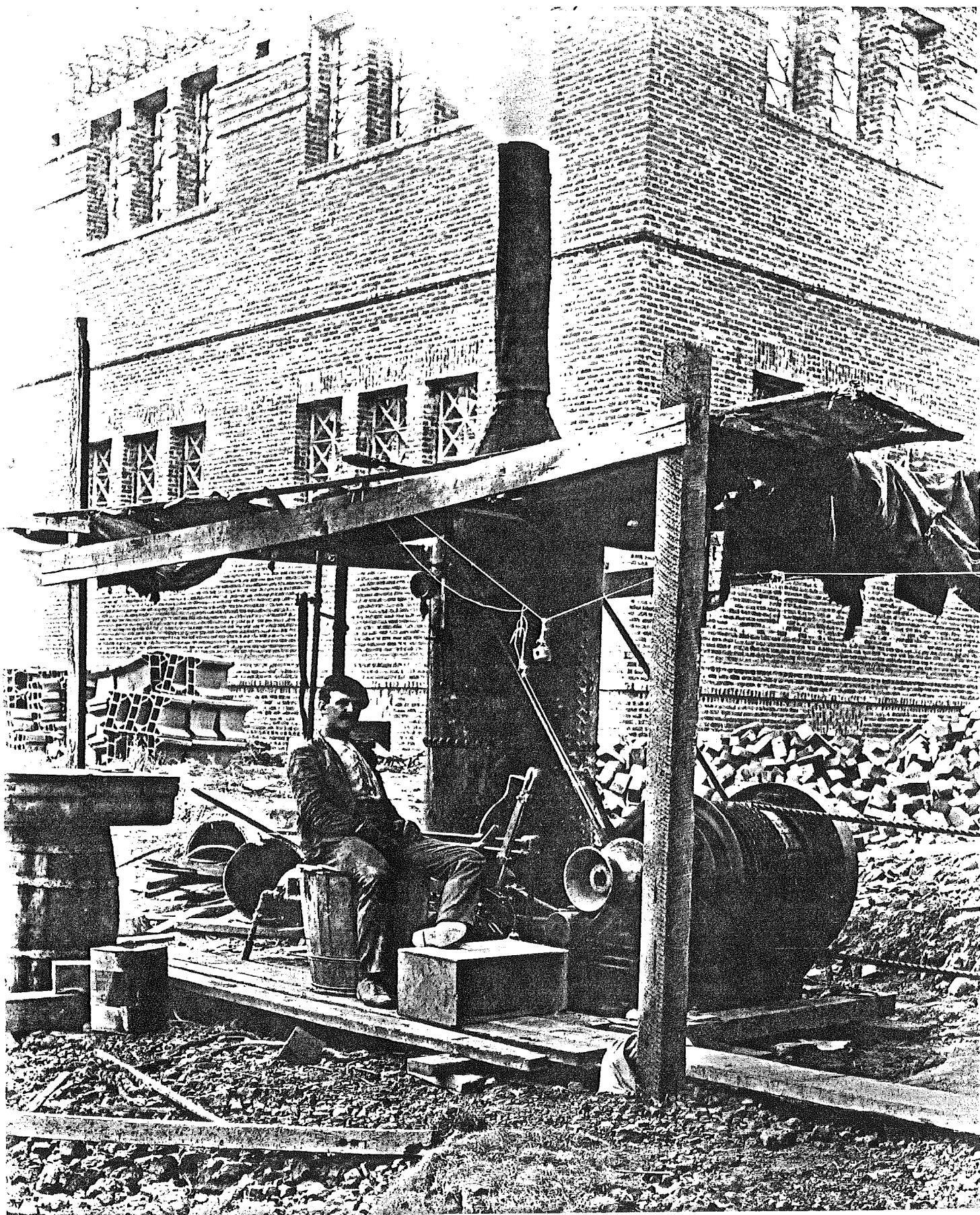




Stanford University, 1916



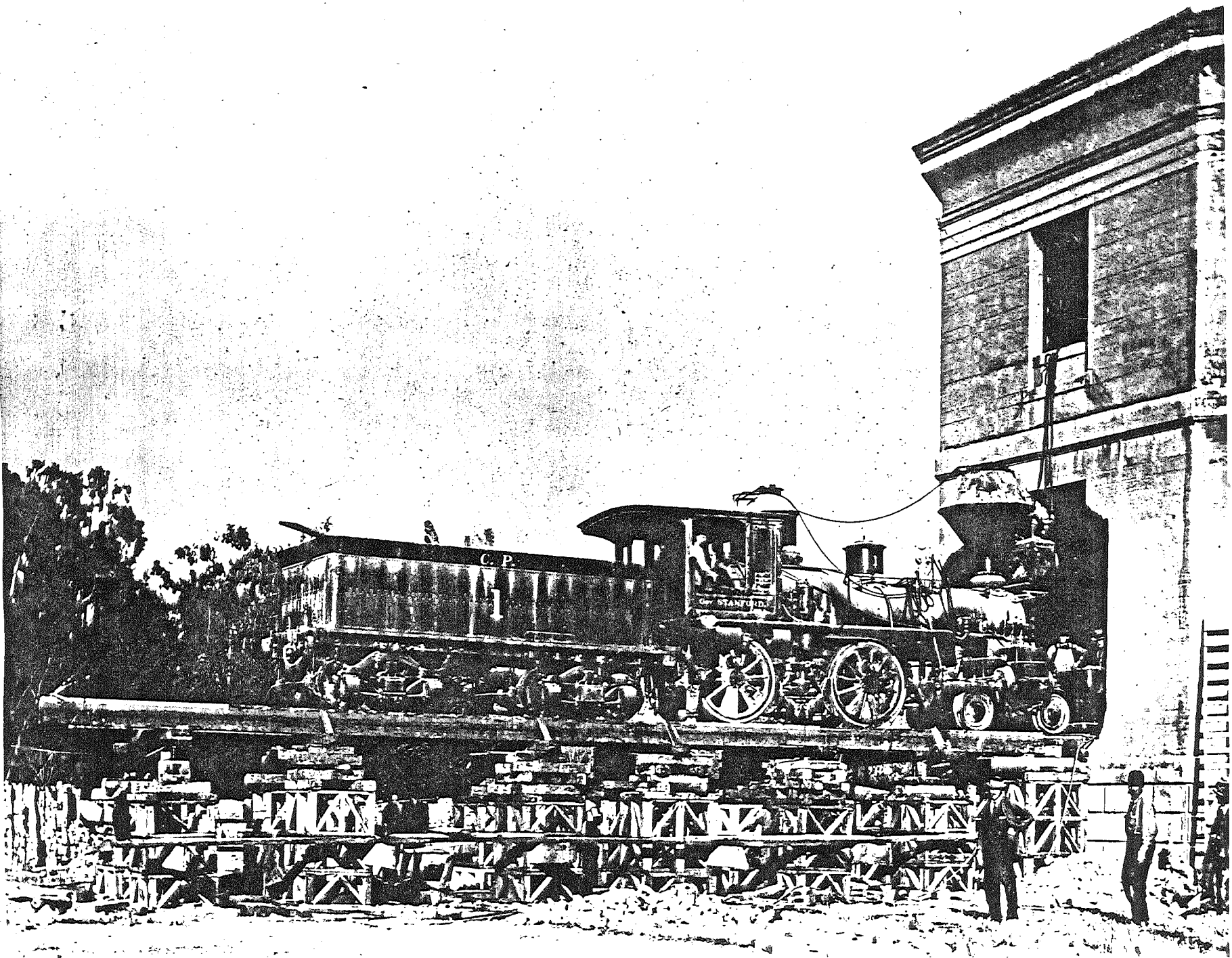
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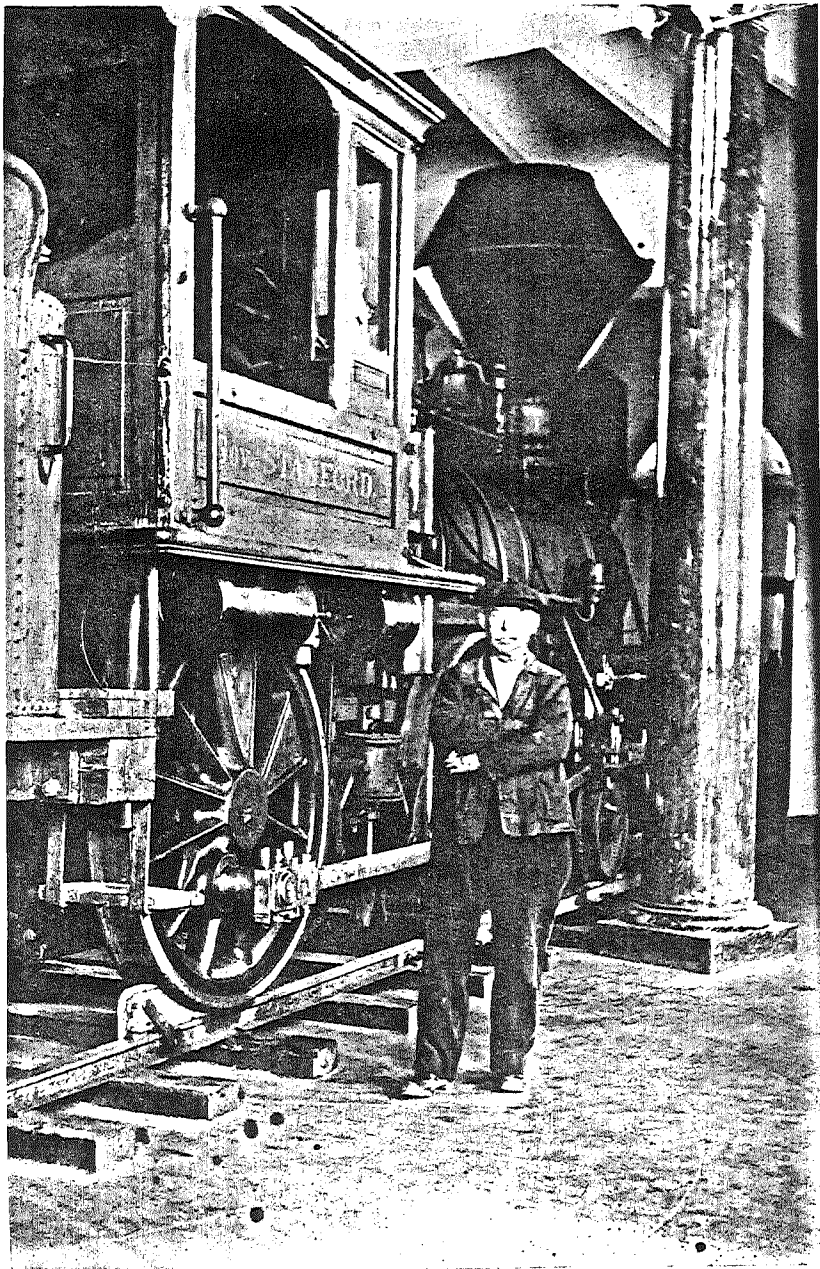


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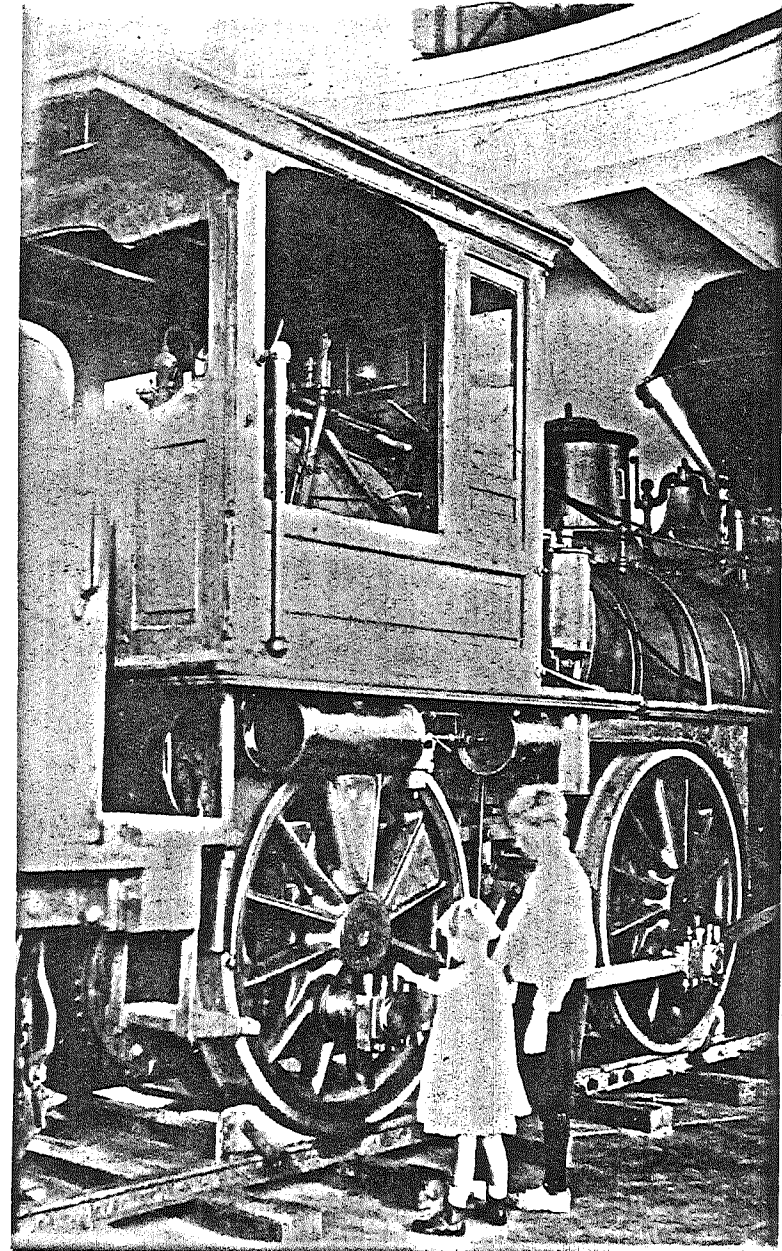


Stanford University, 1916



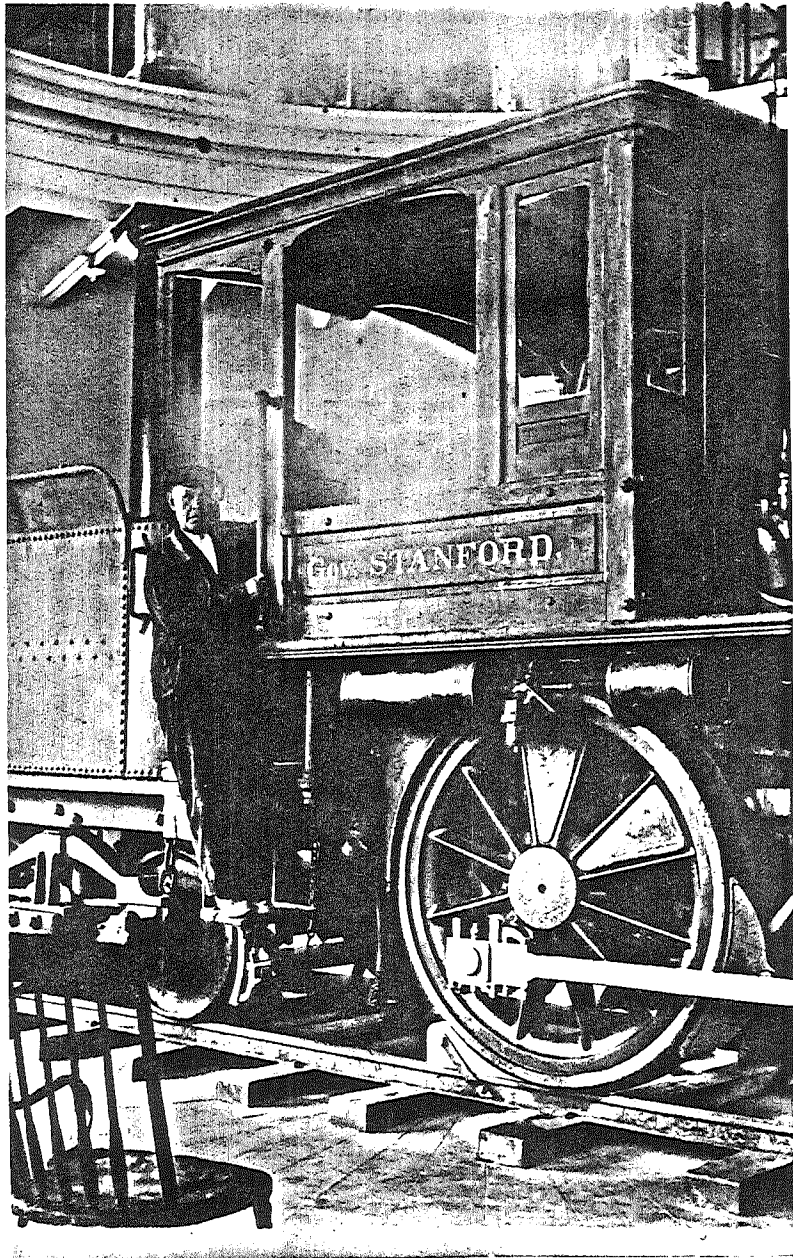


Stanford University, 1920's

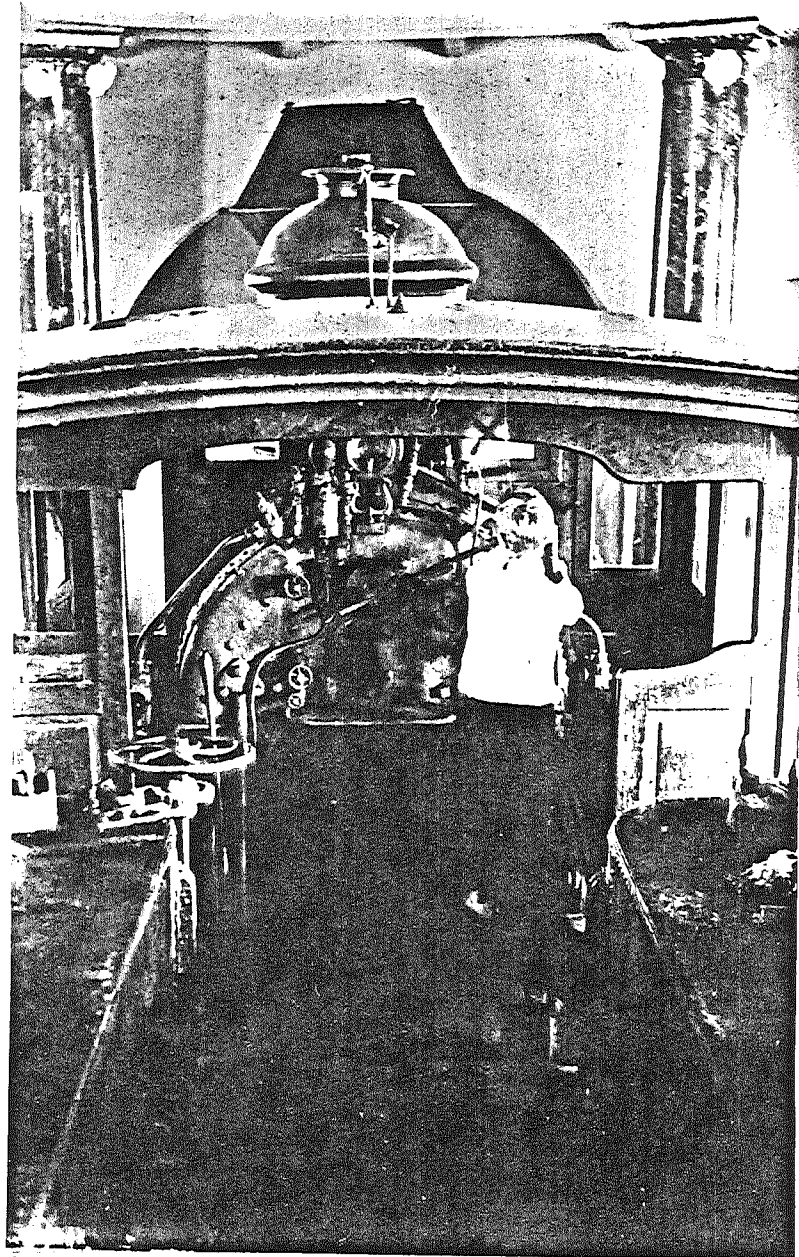


Stanford University, 1920's

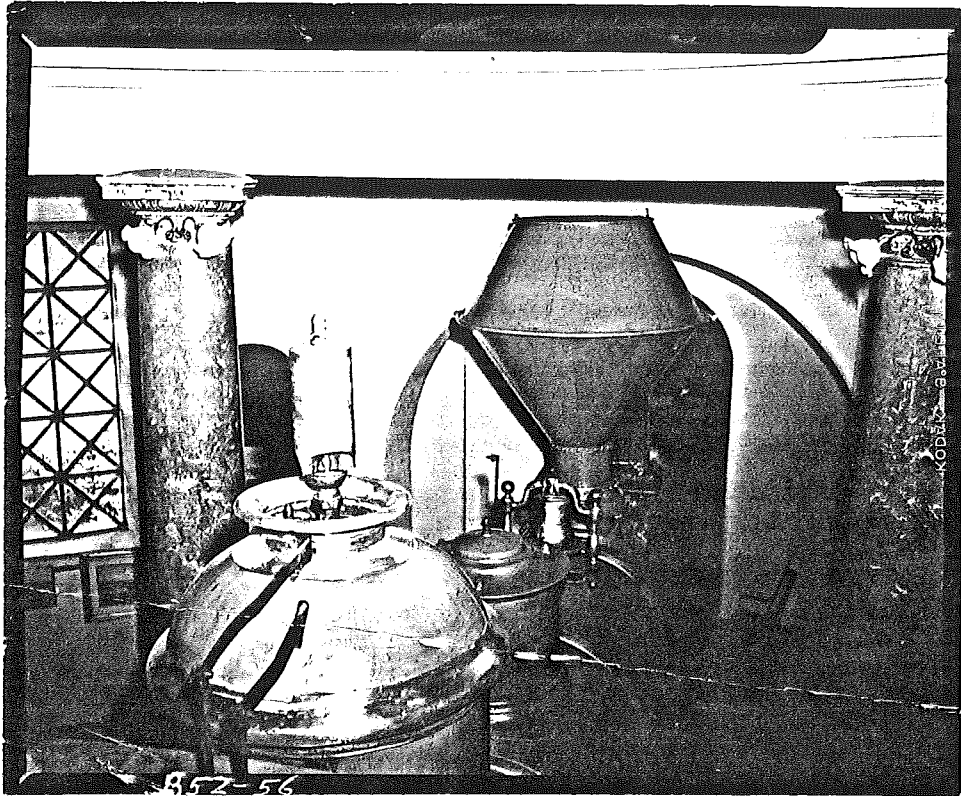




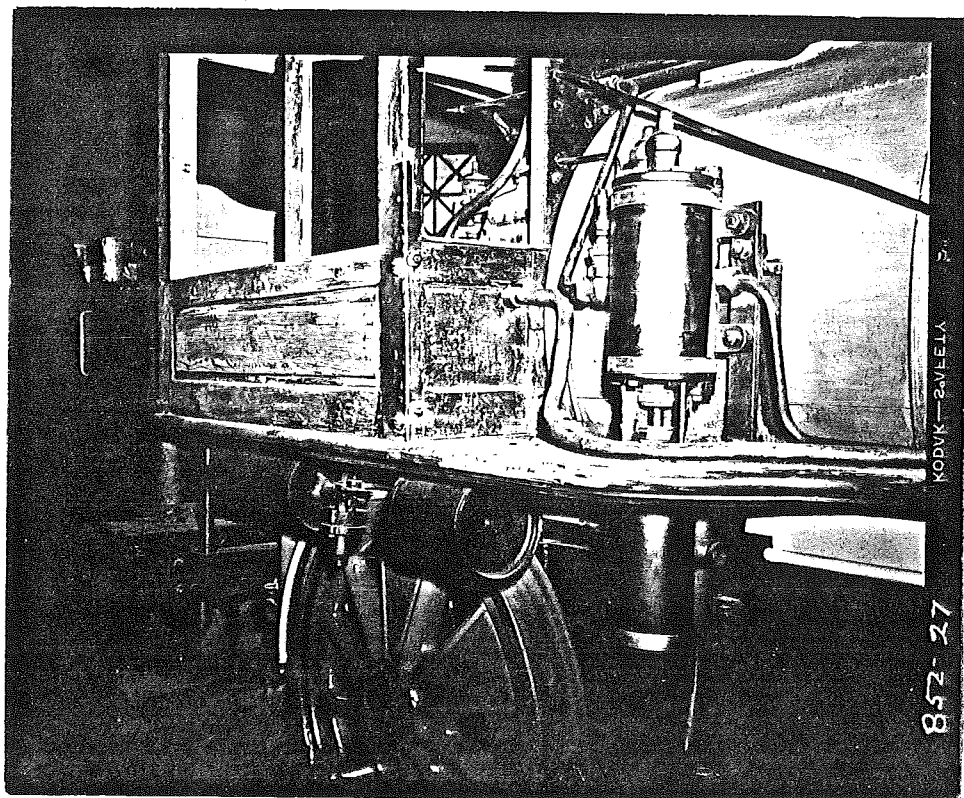
Stanford University, 1920's



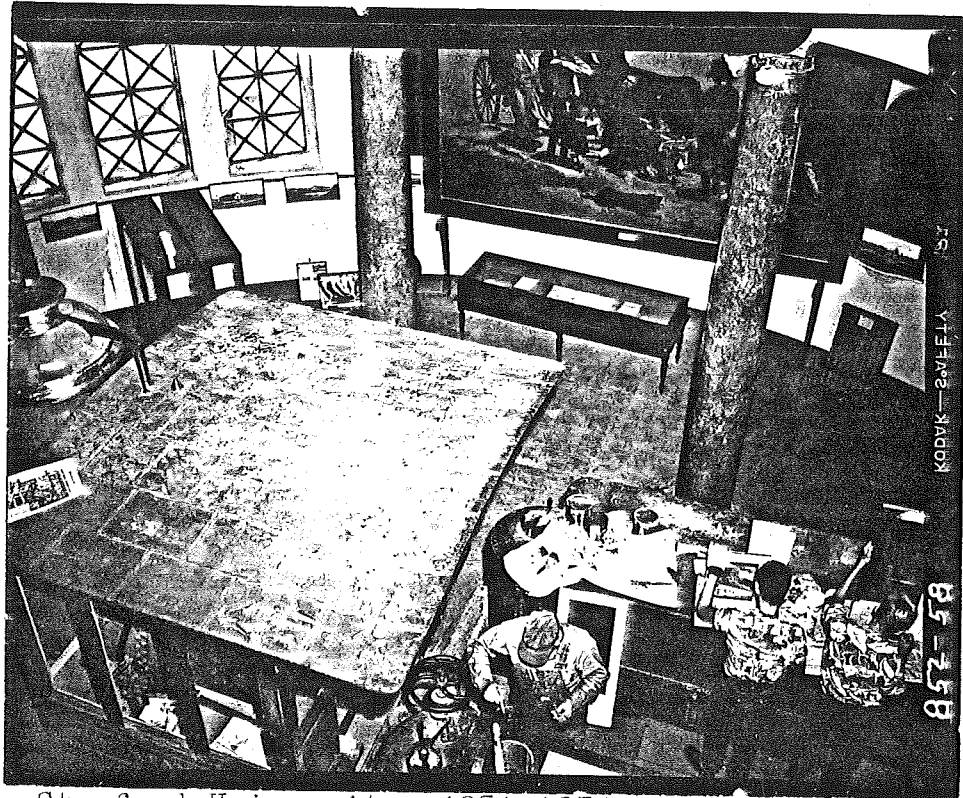
Stanford University, 1920's



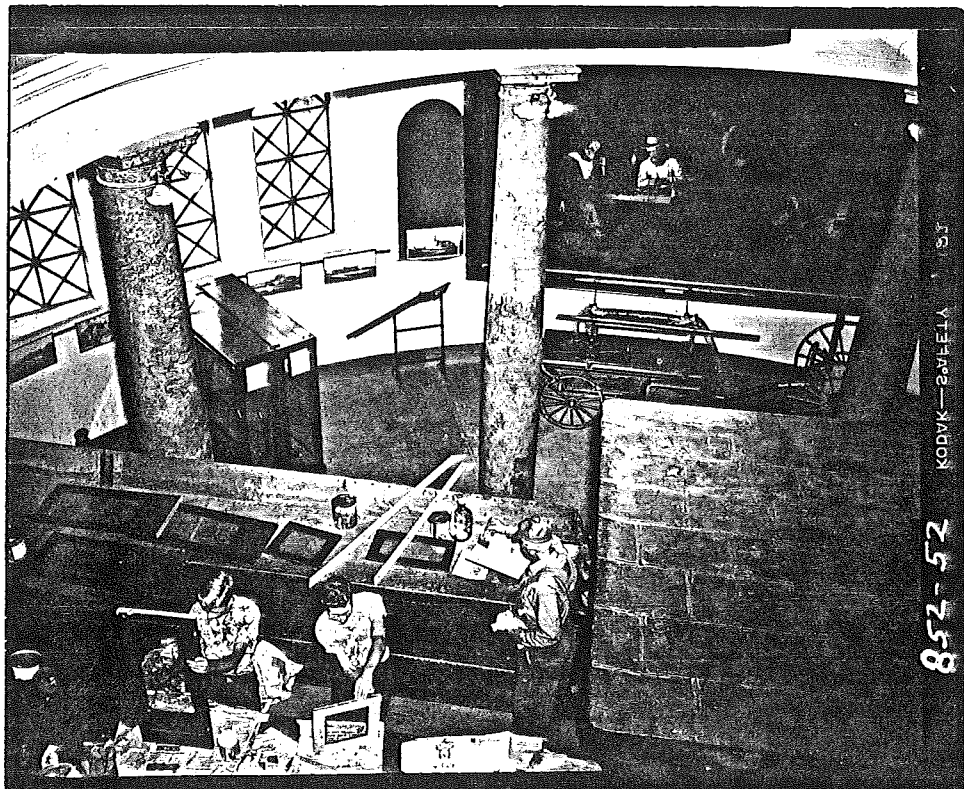
Stanford University, 1951-1954



Stanford University, 1951-1954

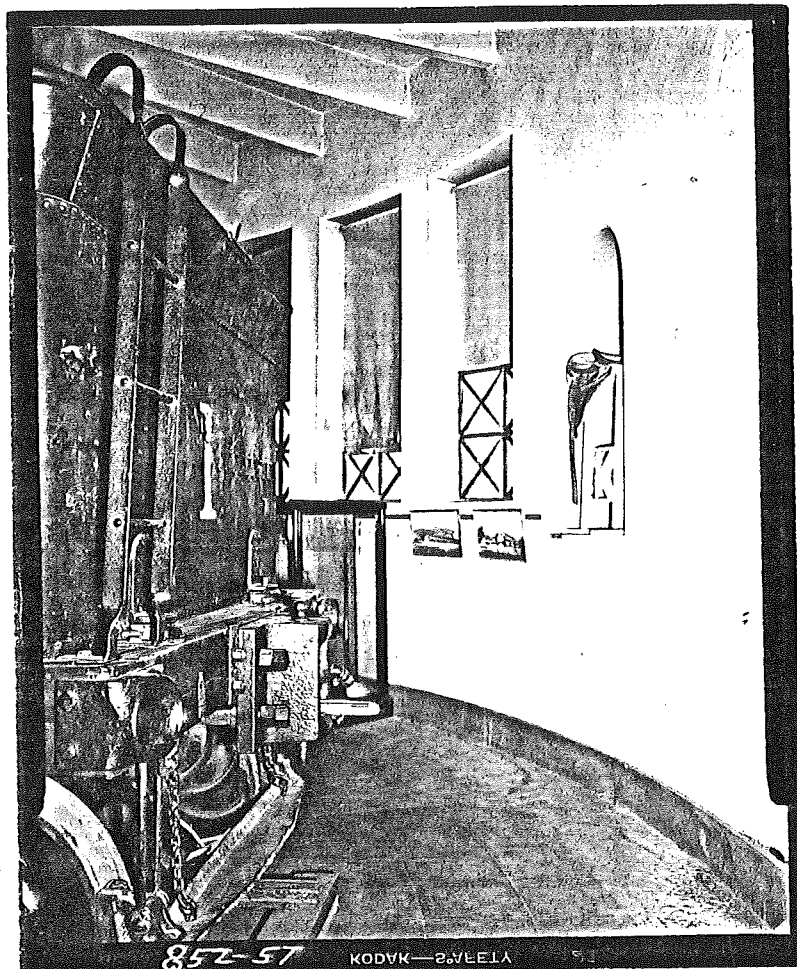


Stanford University, 1951-1954

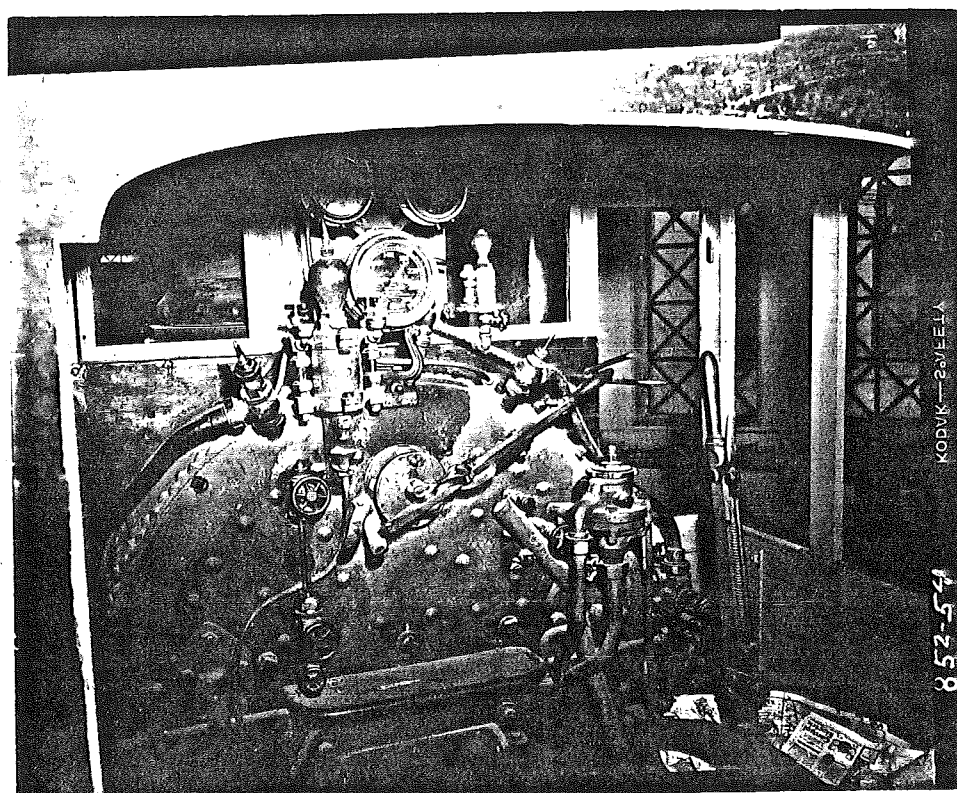


Stanford University, 1951-1954

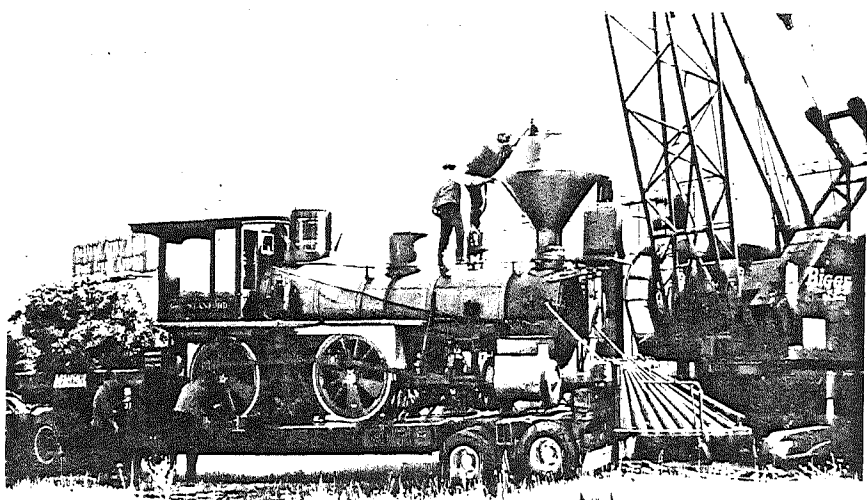
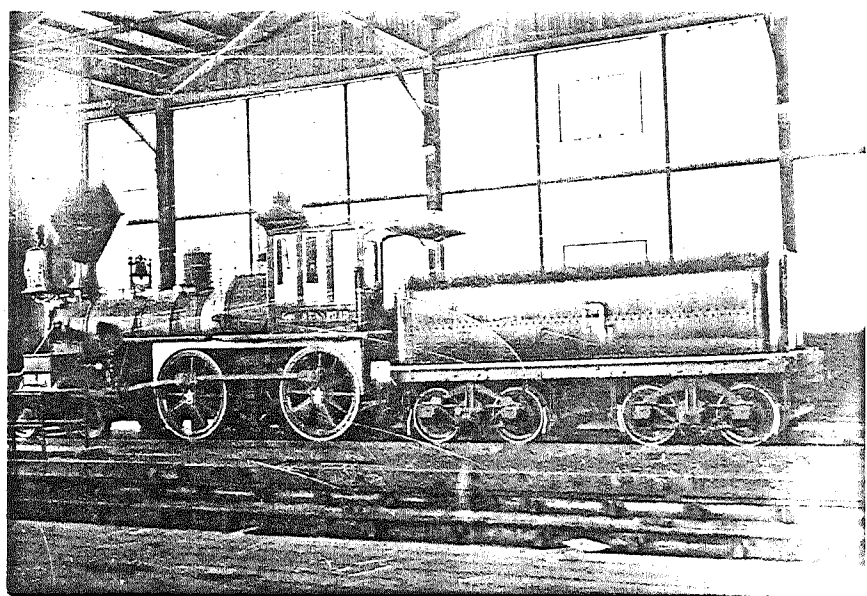
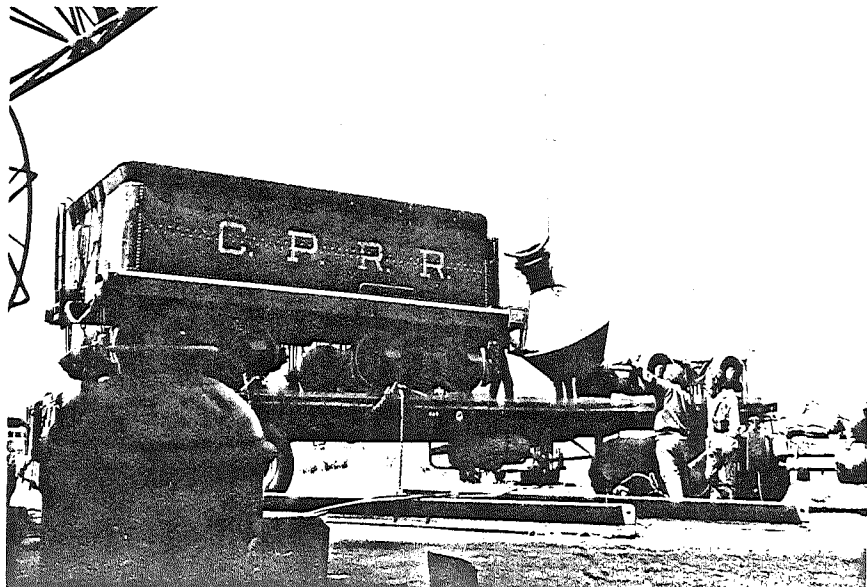
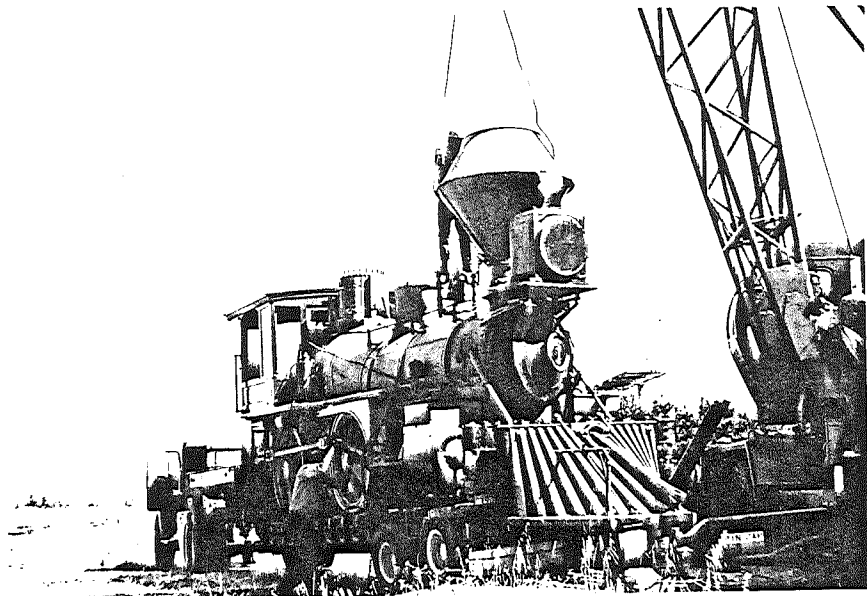




852-57 KODAK-SAFETY 51  
Stanford University, 1951-1954

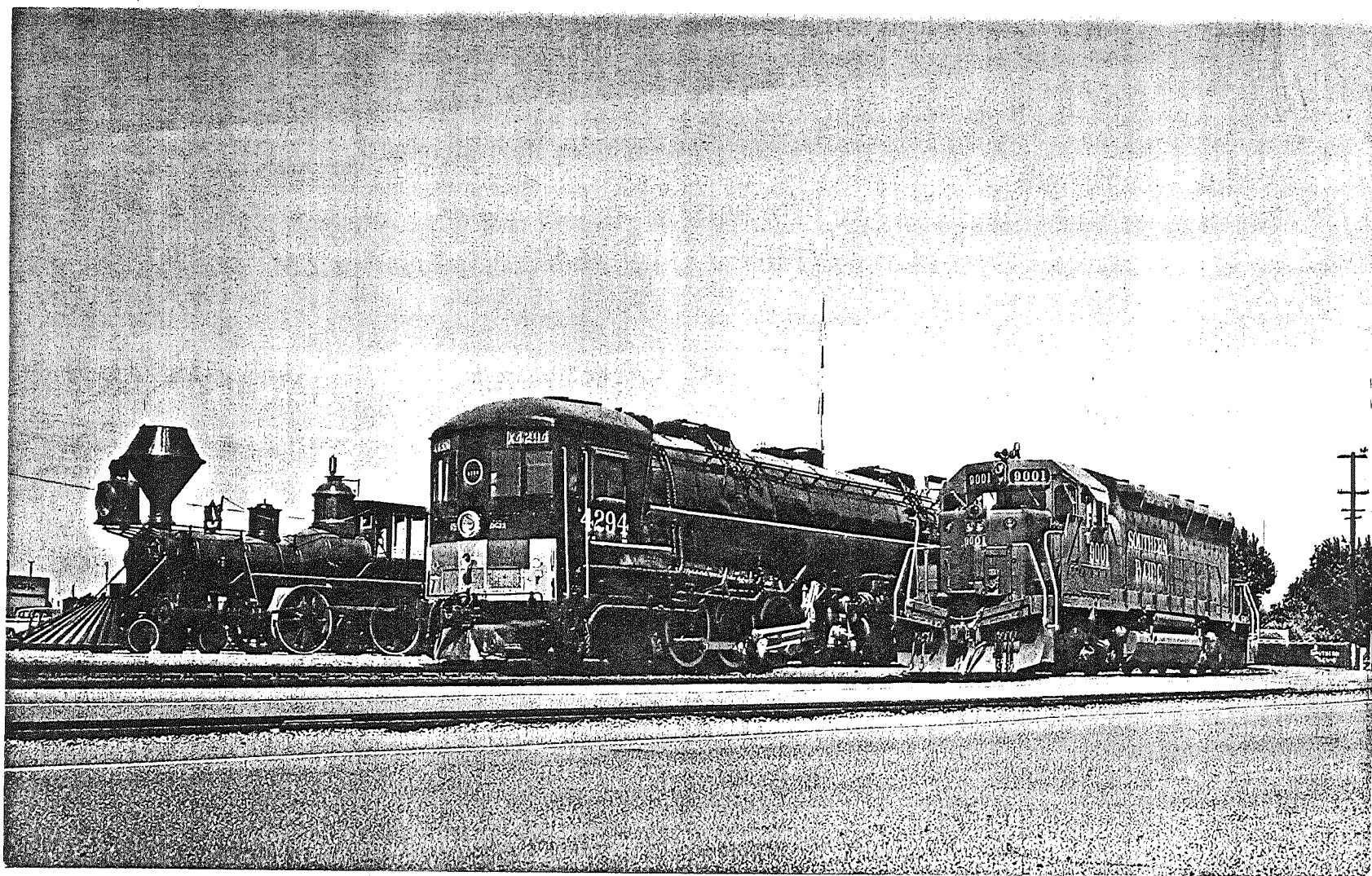


852-54 KODAK-SAFETY 51  
Stanford University, 1951-1954

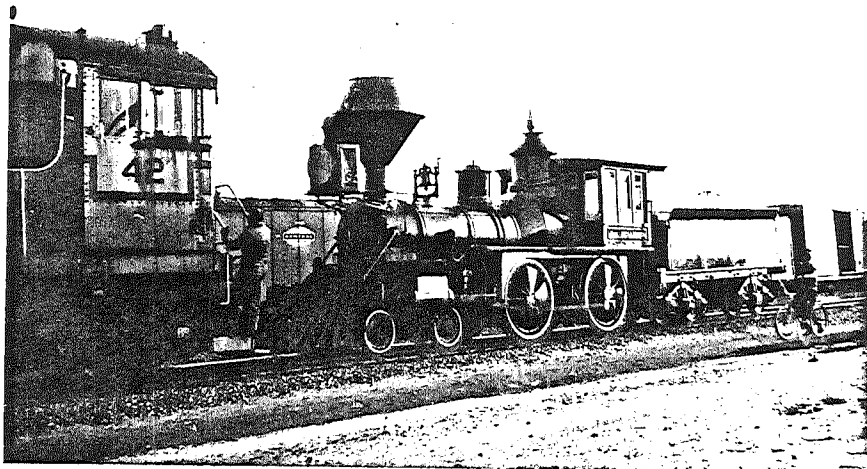


Oakland, May 1969

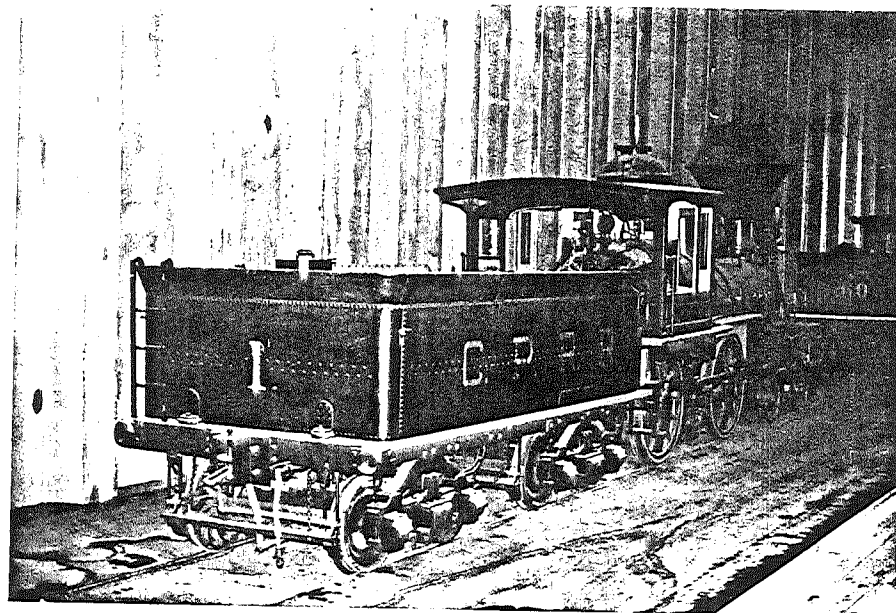




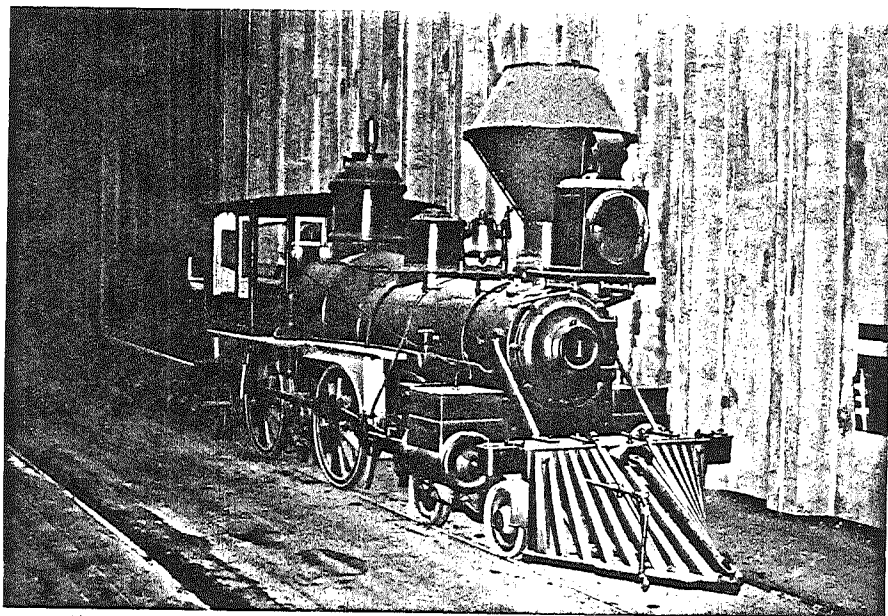
- Sacramento, May 1969



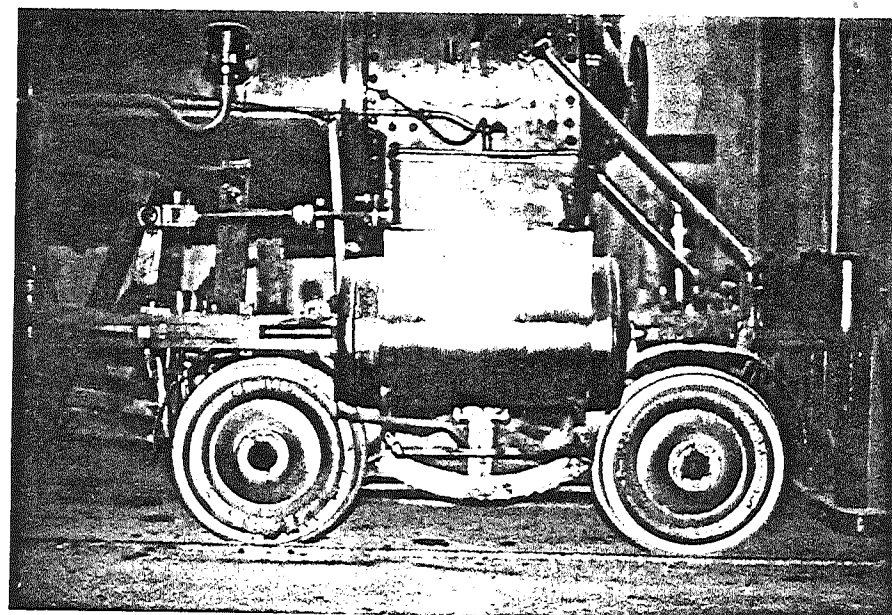
Sacramento, March 1976



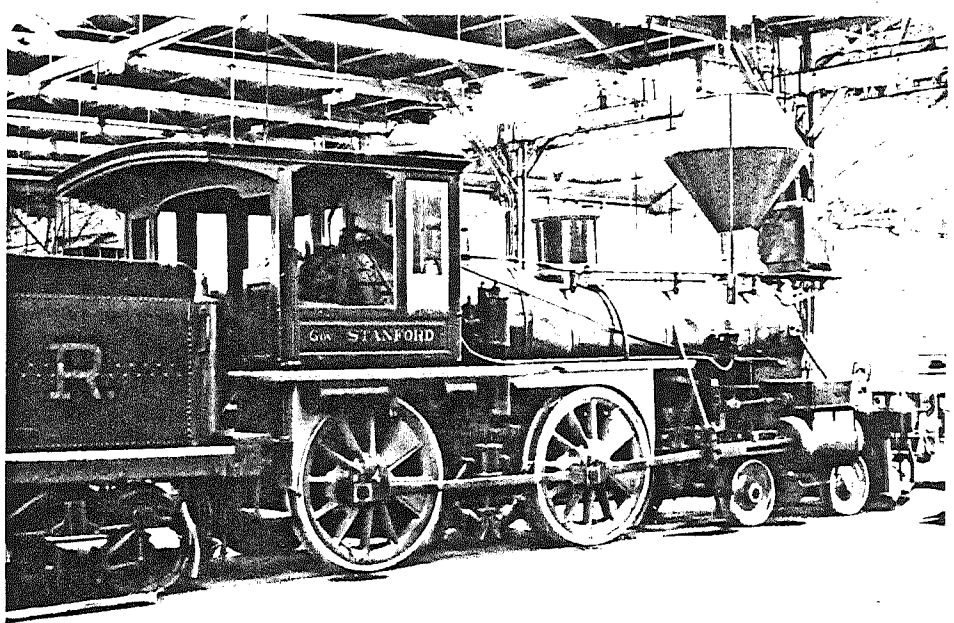
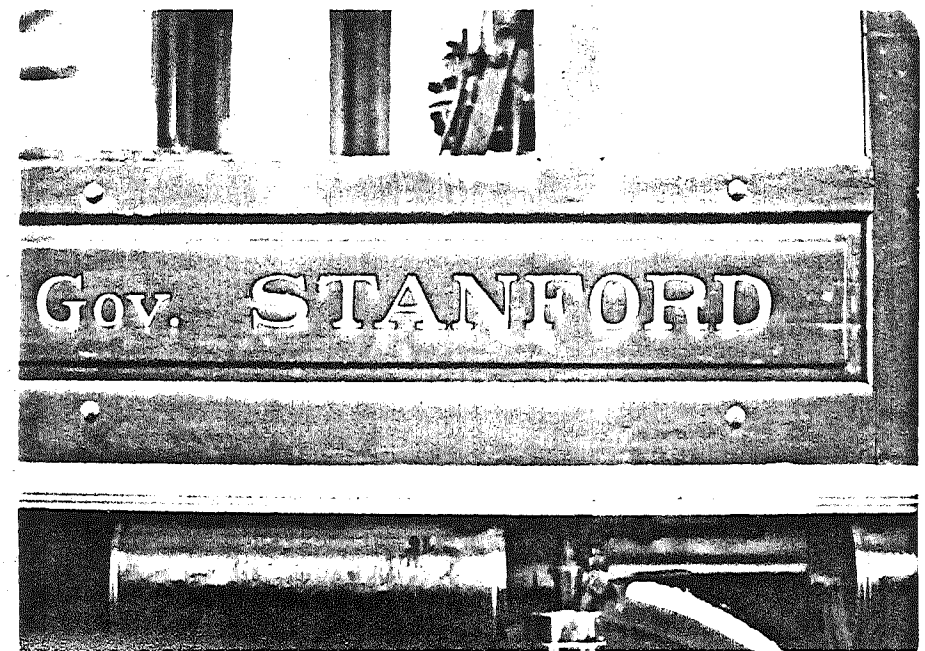
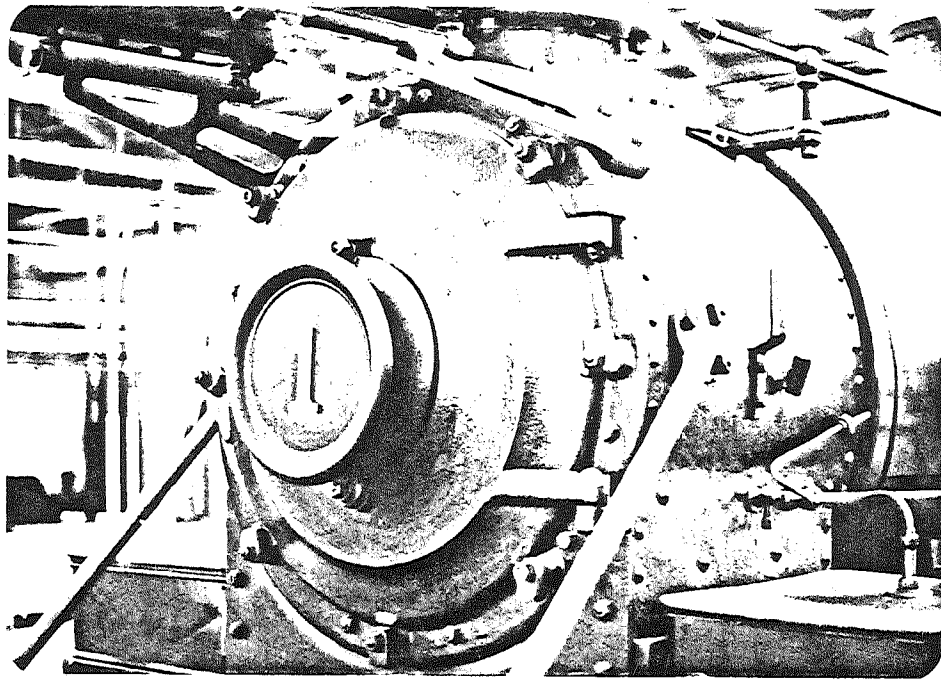
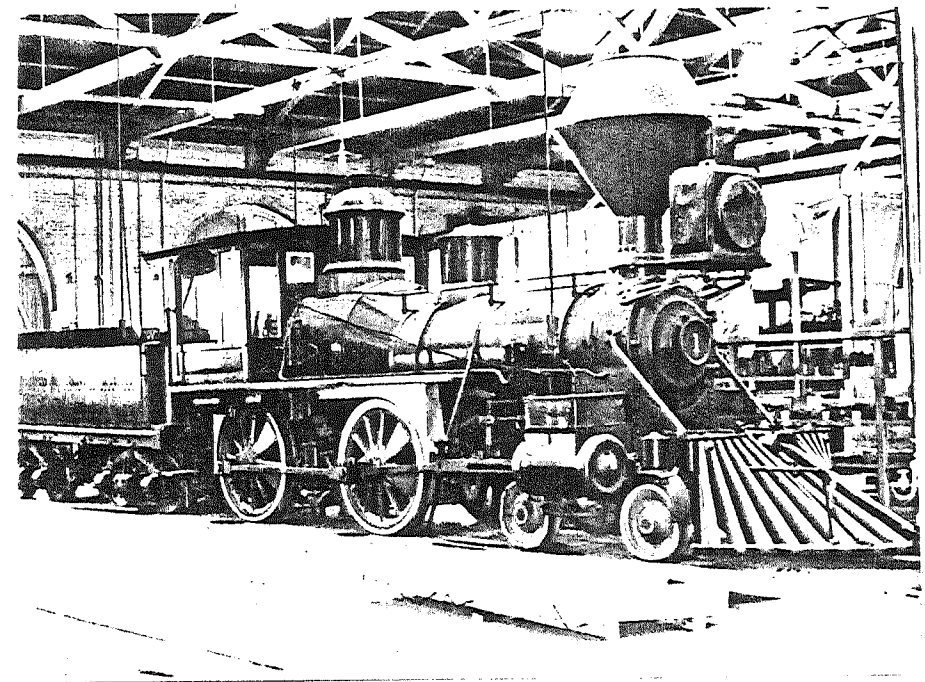
Sacramento, May 1969



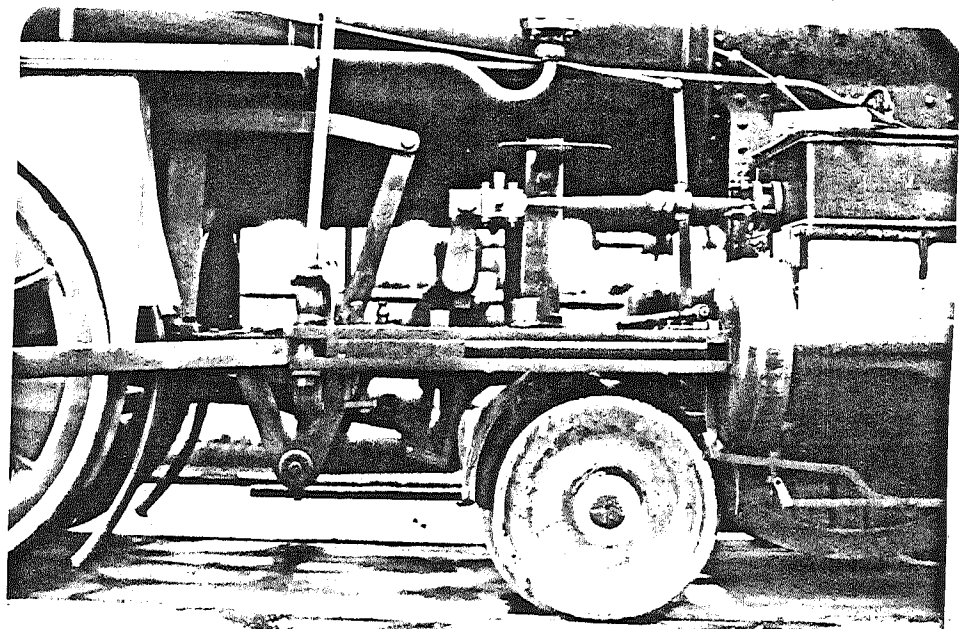
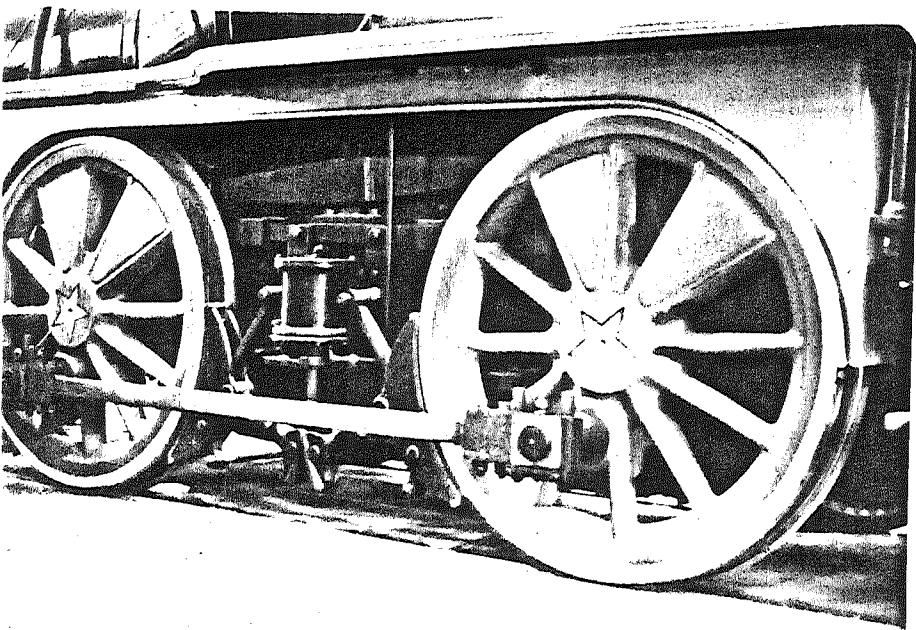
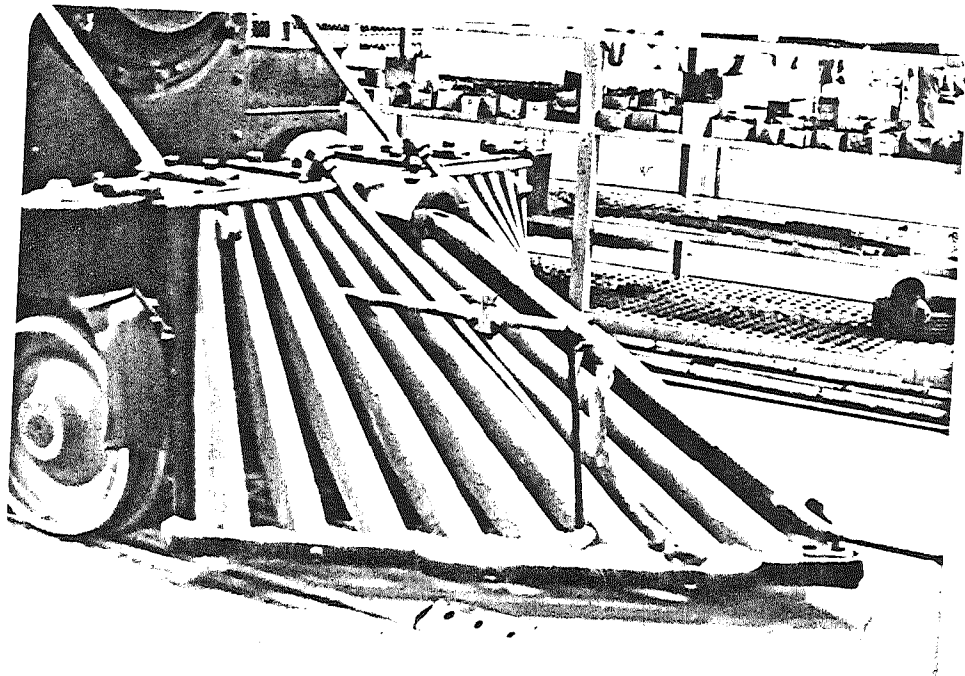
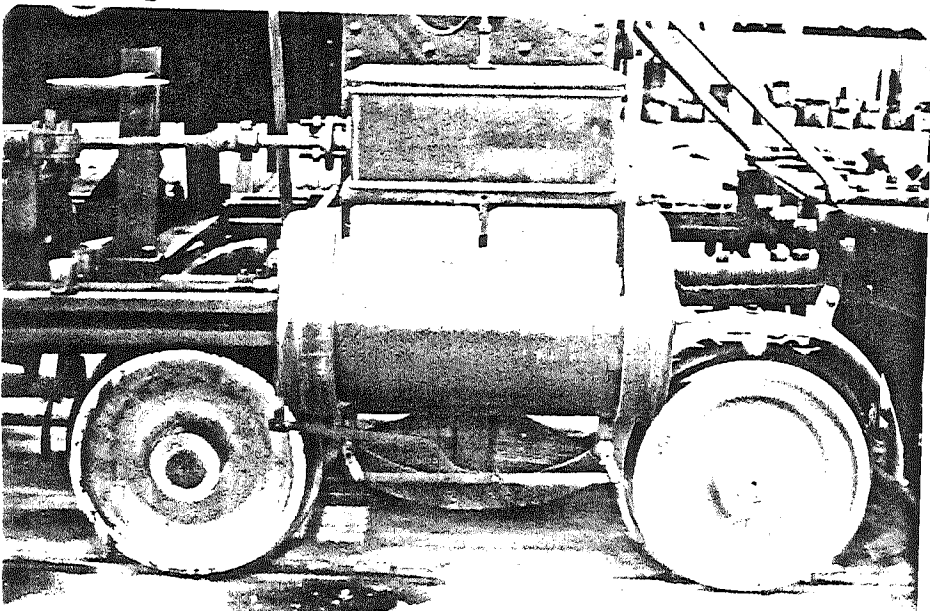
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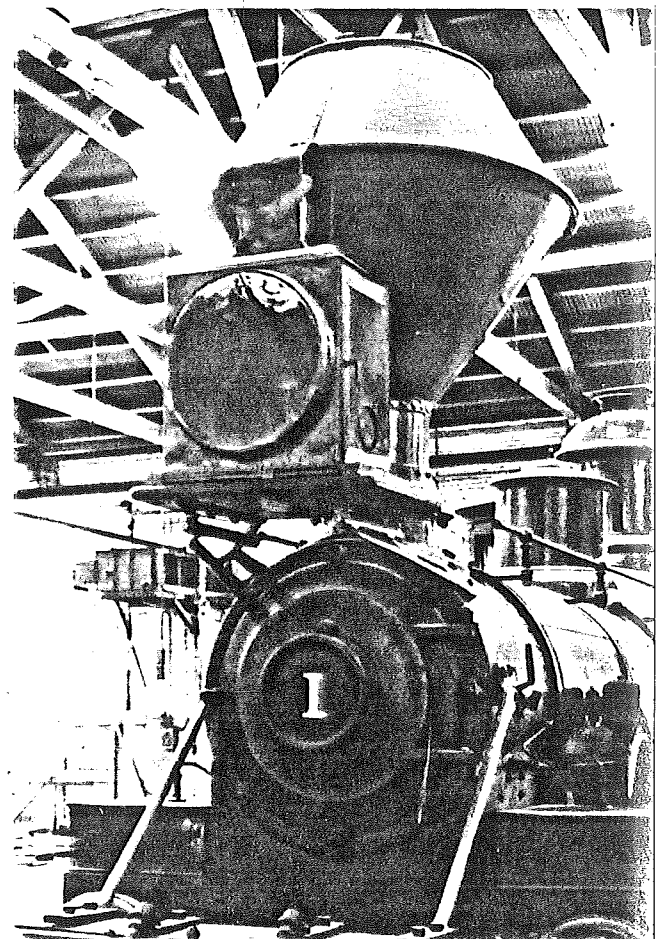
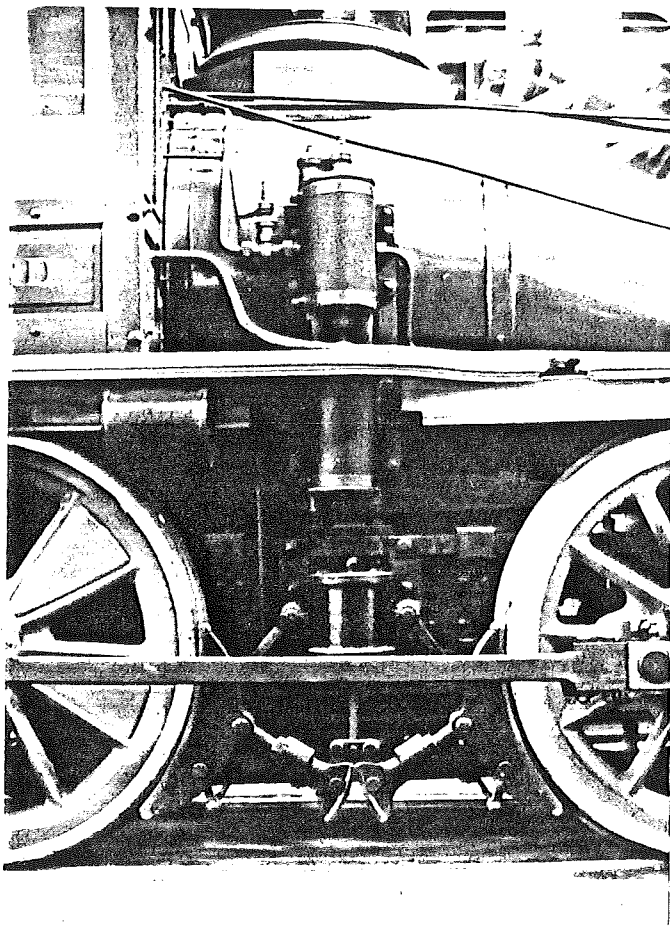
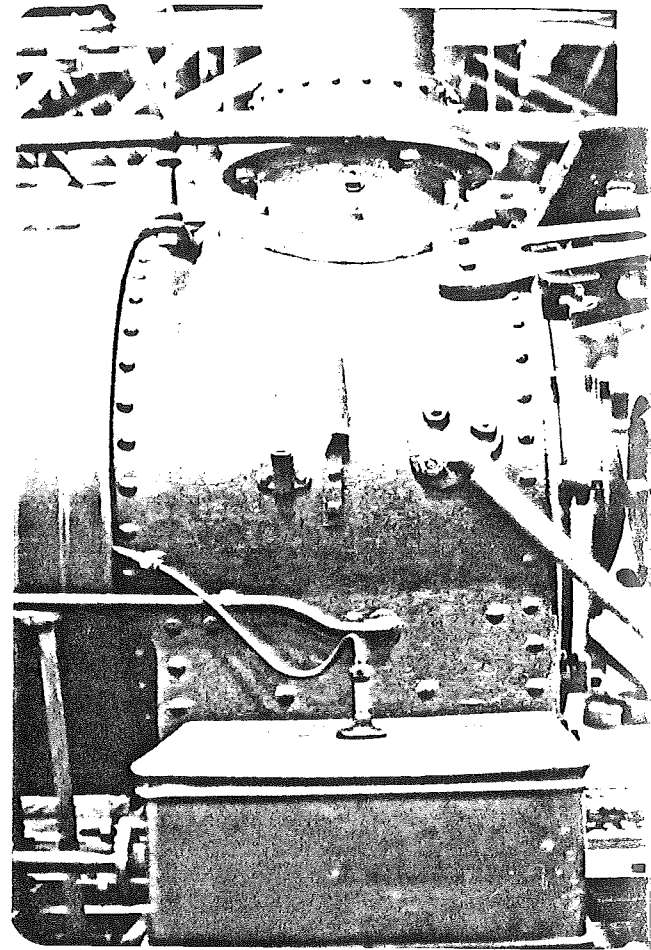
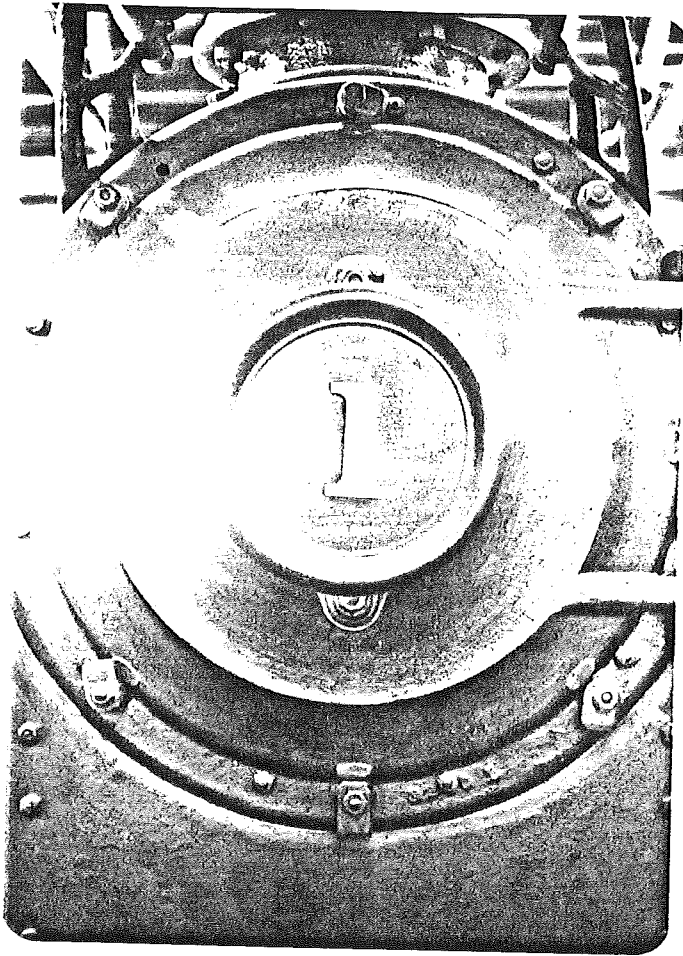


Sacramento, March 1976

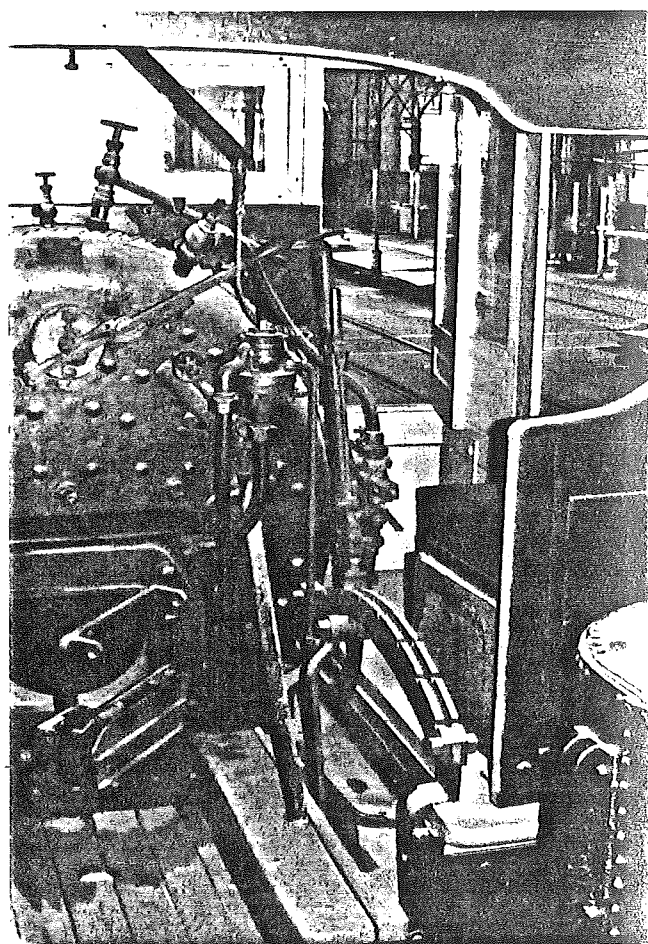
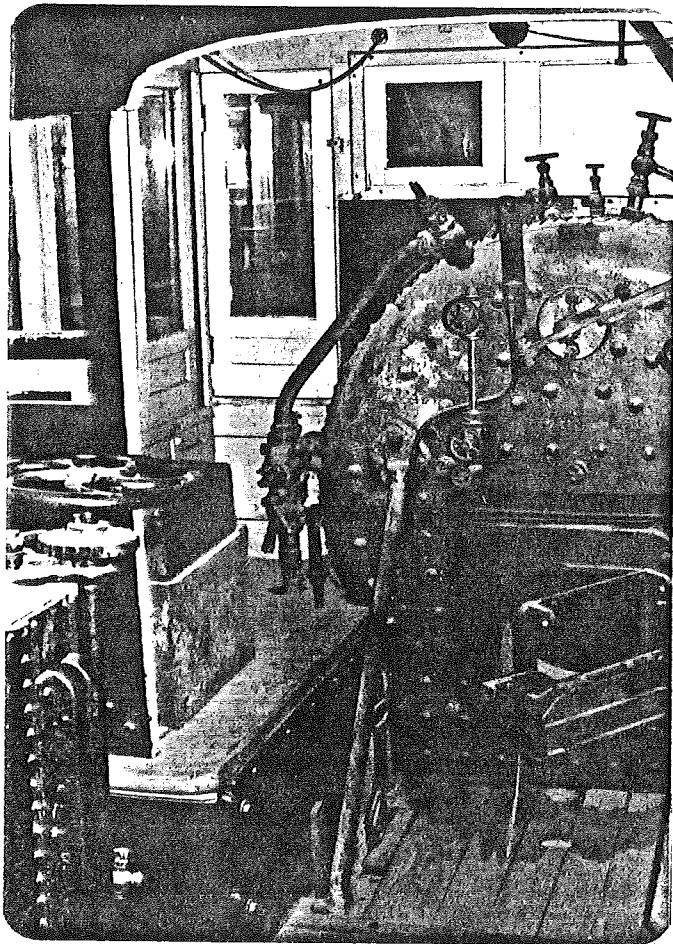
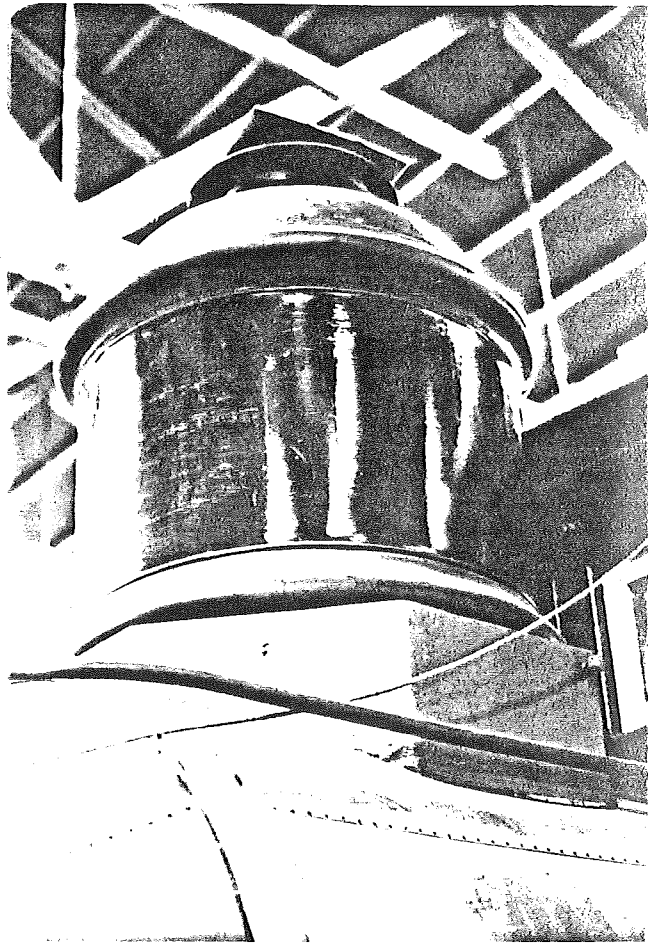
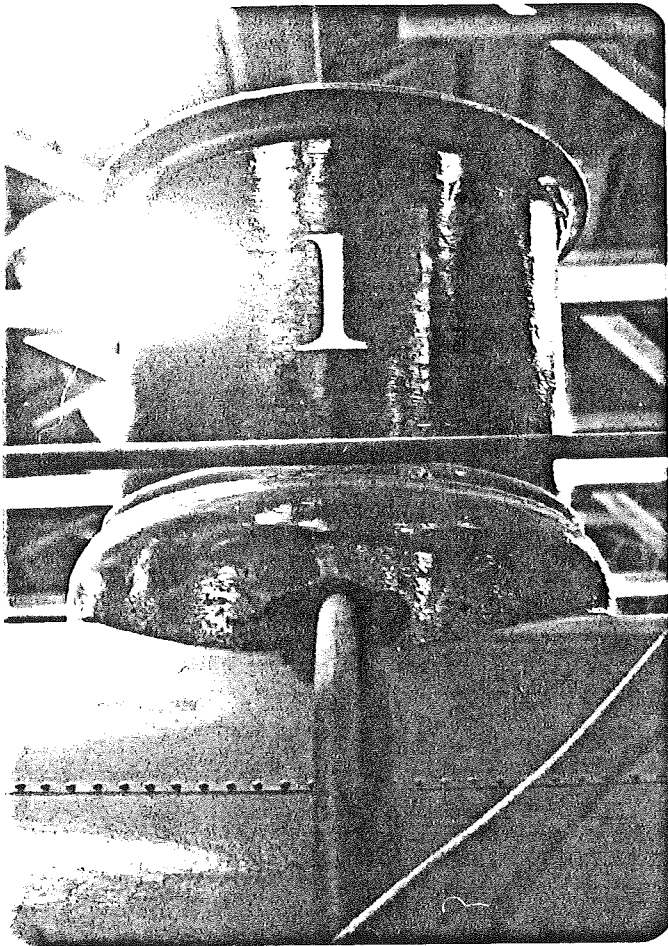


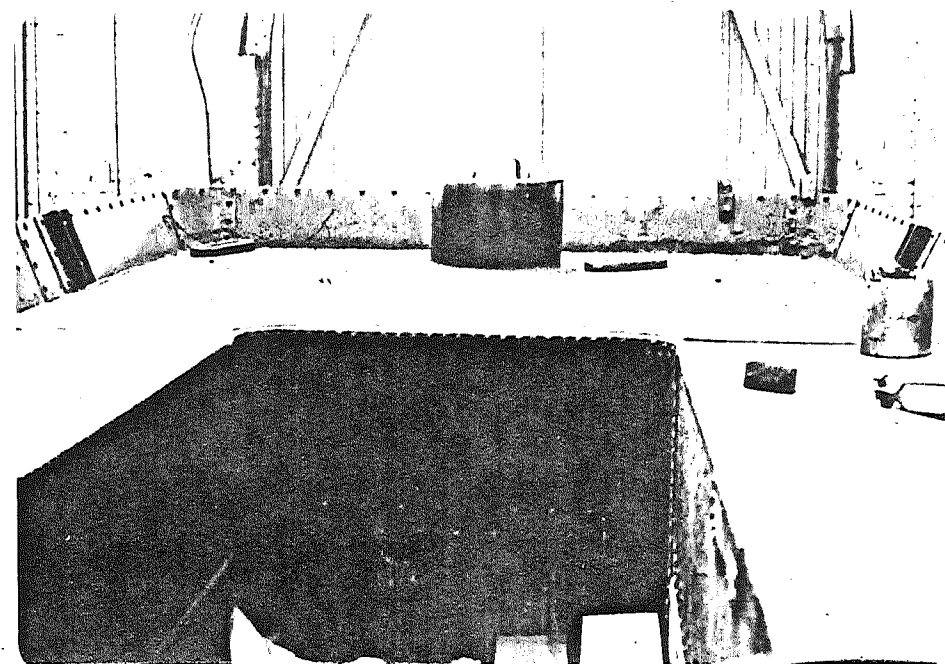
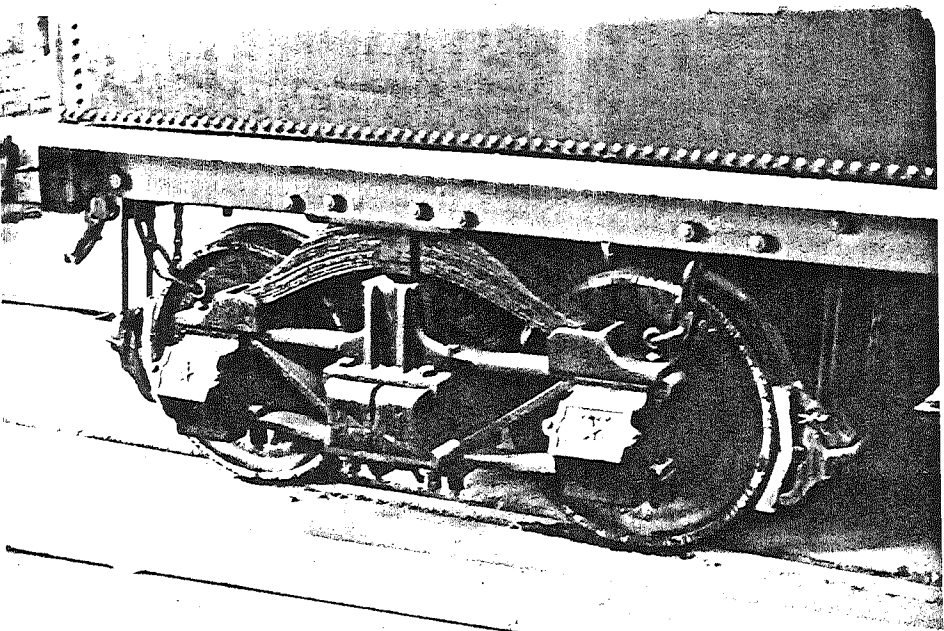
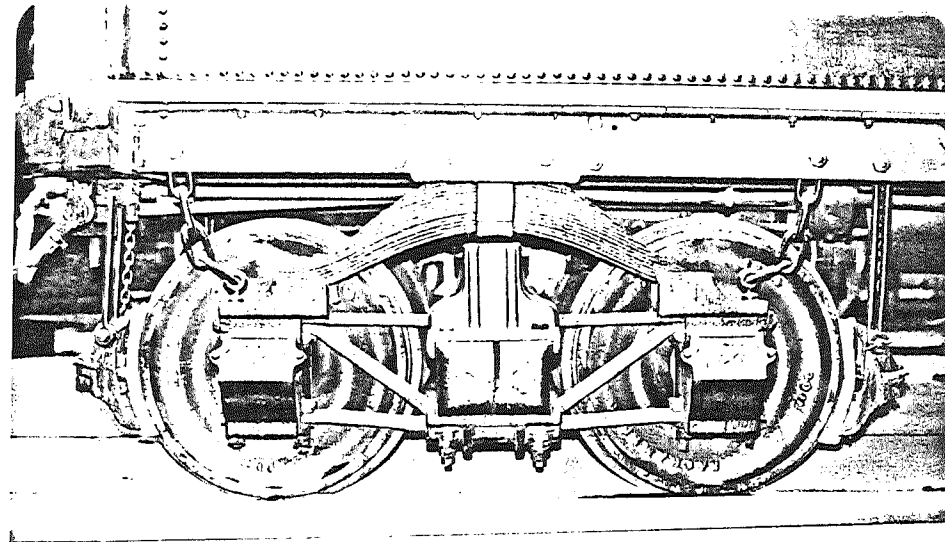
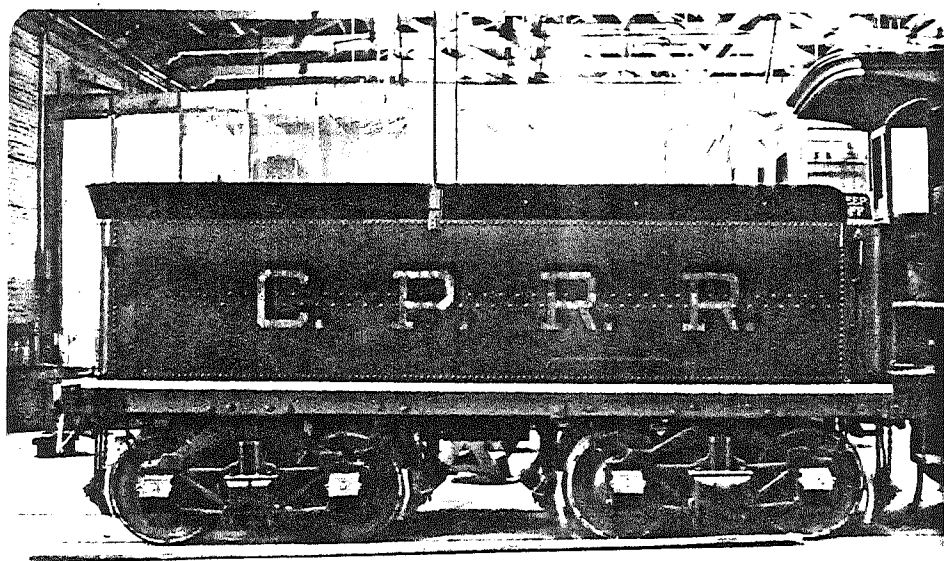












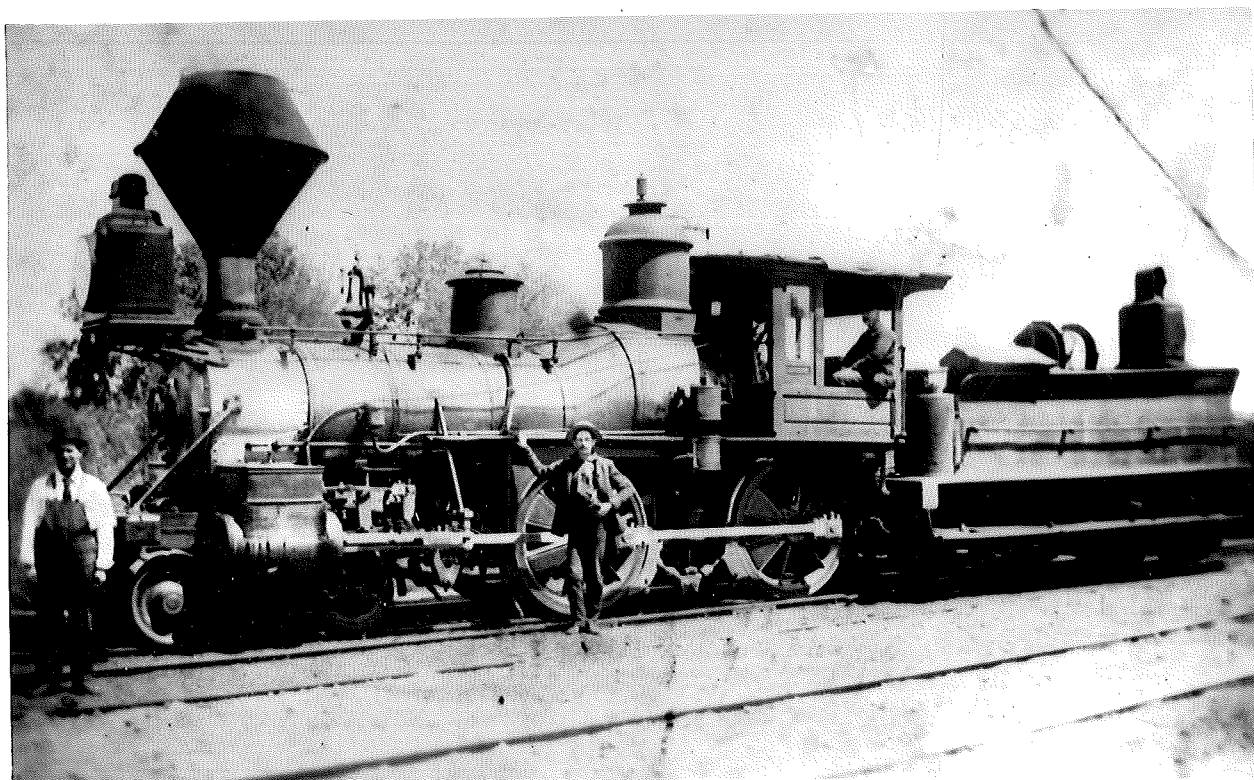




- Sacramento, May 1969



Sacramento, ca. 1882-1891 *9/73*



Sacramento, ca. 1882-1891

*Reversed*